



**COFFEE
SKILLS
PROGRAM**

COURSE CATALOG

Specialty Coffee Association

SCA Coffee Skills Certificate Program Course Catalog

Table of Contents

SCA Certificate Programs	3
The Coffee Skills Program (CSP)	3
SCA Coffee Diploma	3
Learn More	3
INTRODUCTION TO COFFEE MODULE	4
BARISTA SKILLS MODULE	5
BREWING MODULE	7
GREEN COFFEE MODULE	9
ROASTING MODULE	11
SENSORY SKILLS MODULE	13

SCA Certificate Programs

SCA offers certificates in the following education programs: the Coffee Skills Program, the Sustainability Skills Program and the Coffee Technicians Program. These programs are built on decades of knowledge, research, and real-world experience designed to help learners create a successful career in the coffee industry. SCA staff work collaboratively with subject matter experts to develop and maintain the course materials and exams of these programs.

The Coffee Skills Program (CSP)

The Coffee Skills Program consists of five full modules and one stand-alone, introductory course. The modules are Barista Skills, Brewing, Green Coffee, Roasting and Sensory Skills. Each module consists of three progressive courses titled Foundation, Intermediate and Professional. Learners choose which modules and courses are most appropriate for their educational needs.

Introduction To Coffee is a popular course that is authorized for delivery by every AST. In this course, learners are introduced to specialty coffee and the broad topics that could be explored through the other the modules. This is typically a 4-6 hour course and does not include a practical exam.

Foundation courses are typically equivalent to a one-day course. Intermediate courses are typically equivalent to a 2-3 day course. Professional courses are typically equivalent to 3-4 day courses. These courses can also be held over several meeting periods depending on the design of the AST's lesson plan and agreement with learners.

SCA Coffee Diploma

The SCA Coffee Diploma is exclusive to the Coffee Skills Program and is awarded to those learners who have earned 100 or more points with CSP courses. Each of the CSP courses has a point value toward the SCA Coffee Diploma. The program is structured in a way that encourages learners to pursue a well-rounded coffee education on a variety of topics within the industry. Once a learner has achieved eligibility, they may apply for the [SCA Coffee Skills Diploma](#) in the Education menu at sca.coffee. The application form can be found under Education at sca.coffee. The points awarded at each level are listed below:

Introduction to Coffee = 10 points Foundation course = 5 points Intermediate course = 10 points Professional course = 25 points

Learn More

The following pages explain important key information about each module and the corresponding courses. Should you have further questions about the Coffee Skills Program, please contact us at education@sca.coffee. We look forward to seeing you in the classroom.



INTRODUCTION TO COFFEE MODULE

The Introduction to Coffee course is ideal for anyone who is new to specialty coffee. It charts coffee's journey from its origins in Ethiopia to the major commodity that it is today. This course gives a general overview of the specialty coffee supply chain and explores topics such as history and cultivation, variables that affect coffee quality, basics of sensory analysis, fundamentals of roasting, factors of coffee freshness, and principles of brewing. In addition, learners will discuss the importance of water quality, cleanliness and maintenance. This interactive course also includes a cupping, an industry-specific process for evaluating coffee through a sensory experience. There is an online written exam administered upon the completion of the course.

Required Prerequisites	None	Recommended Prerequisites	None	Delivery Method	In-person, distance learning or as a combination of both.	Minimum Length	4 hrs	Required Exams Passing Scores	Written exam 60%
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INTRODUCTION TO COFFEE – TOPIC OVERVIEW

ORIGINS AND SUPPLY CHAIN

- Origins of Coffee
- Coffee's Growing Regions
- Coffee's Journey from Farm To Cup
- The Current Coffee Industry - Producers & Consumers
- Coffee as a Plant, Fruit and Seed
- Most Common Coffee Species
- General Differences in Coffee Species
- Common Varieties of Coffee Species
- Quality - What is Specialty Coffee?
- Harvesting and Processing

COFFEE ROASTING AND STORAGE

- Basics of Roasting Process
- Importance and Strategies for Prolonging Freshness

SENSORY EXPERIENCE

- The Humans Senses
- Taste Recognition and Flavor Perception
- Sensory Experience Influenced by Origin and Terroir, Species, Processing, and Roasting

BREWING

- Common Brewing Methods
- Brewing and Extraction Principles
- Sensory Impact of Extraction
- Introduction to Cupping

IMPACT OF WATER QUALITY AND TEMPERATURE

CLEANING AND MAINTENANCE



BARISTA SKILLS MODULE

Barista Skills teaches the essentials practical skills needed behind the espresso bar such as how to set your grinder, make espresso, foam and texture milk for cappuccinos and create latte art as well as an exploration of health and safety issues, customer service protocols and basic business practices.

Barista Skills can be studied at three different levels within the SCA Coffee Skills Program:

Barista Skills Foundation

The Barista Skills Foundation course allows learners to gain an introductory understanding of the coffee itself as well as foundational skills required to set a grinder, make espressos, foam and texture milk and latte art techniques as per SCA quality standards, while implementing health and safety practices and customer service. Practical learning objectives and activities prepare the learner to conduct key foundational tasks of a barista. A written exam tests theoretical knowledge based on Foundation course learning objectives.

Required Prerequisites	None	Recommended Prerequisites	Introduction to Coffee	Delivery Method	In-person, distance learning or as a combination of both.	Minimum Length	7 hrs	Required Exams Passing Scores	Written exam 60%
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Barista Skills Intermediate

The Barista Skills Intermediate course builds on the concepts and skills introduced in the Foundation course. It is ideal for someone who has barista skills experience and wants to explore how to improve coffee quality and prepare for more complex job functions found in the barista profession. Through this interactive course, learners will gain a deeper understanding of the coffee itself, specifically the impact of a coffee's variety, origins and processing methods on flavor; the parameters of coffee quantity, grind texture, water quality and shot time and their interaction when dialing in a brew recipe; drink construction and taste differences; workflow management and efficiency, sensory aspects of the espresso extraction; milk handling and techniques as well as latte art. In addition to coffee preparation, this course also covers key concepts regarding health and safety, customer service and basic business practices. A written exam tests Intermediate course knowledge while a practical exam assesses the learner's ability in terms of grinder calibration, espresso extraction analysis, latte art skills and drinks construction.

Required Prerequisites	None	Recommended Prerequisites	Introduction to Coffee, Barista Skills Foundation	Delivery Method	In-person or as a combination of in-person for practical elements and distance learning for theory.	Minimum Length	14 hrs	Required Exams Passing Scores	Written exam 70% Practical exam Pass each section of exam (passing scores per section vary)
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Barista Skills Professional

The Barista Skills Professional course is designed to test advanced skills and detailed knowledge of the science behind processes used by a professional barista (for example, a barista with 12 months or more of work experience). Successful candidates will have explored and demonstrated the advanced skills typically expected of a head barista. In particular, participants will learn a sophisticated tasting methodology and descriptive explanation of coffee flavors; gain a detailed understanding of drink ingredients and the techniques available to maximize the quality of the drinks made, understand how to manage the skills of others to produce quality drinks, demonstrate an understanding of how to develop brew recipes and a systematic method of structuring beverage menus, and finally be able to consistently apply the highest standard of latte art and milk steaming techniques. A written exam tests professional course knowledge while a practical exam tests the skills described above based on different working activities carried out during the course.

Required Prerequisites	Barista Skills Intermediate	Recommended Prerequisites	Barista Skills Foundation and Brewing Intermediate	Delivery Method	In-person or as a combination of in-person for practical elements and distance learning for theory	Minimum Length	21 hrs	Required Exams Passing Scores	Written exam 80% Practical exam Pass each section of exam (passing scores per section vary)
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BARISTA SKILLS COURSES - TOPIC OVERVIEW

Foundation	Intermediate	Professional
<p>COFFEE BEANS Differences between Arabica and Robusta Species Importance of Coffee Freshness Influence of Roast Degree on Taste</p> <p>WORKSPACE MANAGEMENT AND WORKFLOW Grinders and Espresso Machine Components Safe Use of Grinder and Machine Clean and Organized Workspace</p> <p>ESPRESSO PROCESS Espresso Recipes Grinder Calibration and Dosing Distribution and Tamping Techniques</p> <p>EXTRACTION AND BREWING What is Espresso Barista Routine</p> <p>ESPRESSO SENSORY ANALYSIS Espresso Extraction and Descriptors</p> <p>MILK Freshness Foaming and Temperature of Steamed Milk</p> <p>ESPRESSO BASED MENU Drink Components and Construction</p> <p>CLEANING, HEALTH AND SAFETY Safe and Hygienic Work Practices Cleaning of Equipment</p> <p>WATER QUALITY Impact on Brew Quality and Machine Function</p> <p>CUSTOMER SERVICE AND CAFÉ MANAGEMENT The Customer Experience</p>	<p>COFFEE BEANS Arabica Varieties Impact of Origin and Processing Methods on Flavor Impact of Roasting on Solubility and Density Degassing of Roasted Coffee</p> <p>WORKSPACE MANAGEMENT AND WORKFLOW Coffee Equipment and Accessories Layout Working in Pairs</p> <p>ESPRESSO PROCESS Impact of Grinder Models and Burrs Types Dosing, Distribution and Tamping Techniques</p> <p>EXTRACTION AND BREWING Brew Ratio Calculation and Espresso Brew Formula Strength and Extraction in Espresso Brewing Use of a Refractometer Brew Recipes Impact on Flavor and Body</p> <p>SENSORY Extraction Rates of Different Compounds and Flavors Body and Texture of an Espresso Use of SCA Flavor Wheel</p> <p>MILK Composition and Deterioration of Milk Foam Quality and Stability Milk Substitutes Steaming Technique and SCA Foam Standard SCA Latte Art Standards</p> <p>ESPRESSO BASED MENU Espresso-Based Construction and Taste Differences Preparing Multiple Beverages Correctly</p> <p>CLEANING, HEALTH AND SAFETY Stock Management Health and Safety Awareness Grinder and Machine Cleaning and Maintenance</p> <p>WATER QUALITY SCA Water Test and Guidelines</p> <p>CUSTOMER SERVICE AND CAFÉ MANAGEMENT Customer Interactions and Cost and Goods</p>	<p>COFFEE BEANS Density, Variety and Cultivar Processing Methods Decaffeination Packaging, Storage and Freshness</p> <p>WORKSPACE MANAGEMENT AND WORKFLOW Drinks Production</p> <p>ESPRESSO PROCESS Consistency of Dosing, Tamping and Waste Grind Particle Distribution Tamper and Distribution Tools</p> <p>EXTRACTION AND BREWING Espresso Machine Impact of Temperature and Pressure on Brewing Boiler Systems and Pressure Systems Designing Brew Recipes Espresso Blends Construction Extraction Measurement Tools and Techniques</p> <p>SENSORY Organic Acids Sensory Evaluation Optimum Balance of Multiple Coffees Awareness of Milk's Effect on Coffee Flavor</p> <p>MILK Milk Composition and Processing Foam Creation, Quality and Stability Milk Quality and its Ability to Foam Factors Affecting Milk Quality Proteolysis and Lipolysis Coffee Acidity's Effect on Milk Heat's Effect on Milk SCA Foam Standards SCA Latte Art Standards - Free Pour</p> <p>WATER QUALITY Measuring TDS / Alkalinity / Total Hardness / pH Water Filtration - Testing and Filtration Systems</p> <p>SIMPLE FINANCIAL CONCEPTS Cost and Goods</p>



BREWING MODULE

The Brewing courses cover numerous brewing coffee methods as well as the brewing variables that affect quality. Hands on learning is emphasized with a focus on grind profiles, brewing methods, coffee strength measurements, and coffee extraction charting.

Brewing can be studied at three different levels within the SCA Coffee Skills Program:

Brewing Foundation

The Brewing Foundation course introduces the learner to the different methods of brewing coffee. The learner will receive theoretical and practical hands-on instruction for a range of devices including automatic and manual gravity brewers, as well as other commonly used brewers within their local culture. Practical learning objectives and activities prepare the learner to produce a tasty brew based on an understanding of the essential brewing elements and an analysis of their brew results. A written exam tests theoretical knowledge based on Foundation course learning objectives.

Required Prerequisites	None	Recommended Prerequisites	Introduction to Coffee	Delivery Method	In-person, distance learning or as a combination of both.	Minimum Length	7 hrs	Required Exams Passing Scores	Written exam 60%
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Brewing Intermediate

The Brewing Intermediate course builds on the concepts and skills introduced in the Foundation course. It is ideal for someone who has brewing experience and wants to further explore how to improve coffee quality. This course covers a wide range of topics, including an exploration of the brewing process in terms of device usage, extraction order and wetting; the essential elements of brewing and their individual influence on the final cup; the scientific measurement of extracted coffee strength and charting a coffee's extraction; analysis of brewed coffee and espresso and adjustments to consider in order to deliver a correctly extracted, well balanced cup and finally, the importance of cleaning and maintenance. A written exam tests intermediate course knowledge while a practical exam assesses the learner's ability to identify strength and extraction differences in brewed coffee; prepare brews from different devices and diagnose how to correct the recipe for a poorly brewed coffee from an automatic filter brewer.

Required Prerequisites	None	Recommended Prerequisites	Introduction to Coffee, Brewing Foundation and Sensory Skills Foundation	Delivery Method	In-person or as a combination of in-person for practical elements and distance learning for theory.	Minimum Length	14 hrs	Required Exams Passing Scores	Written exam 70% Practical exam 70%
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Brewing Professional

The Brewing Professional course builds upon the concepts and skills introduced in the Brewing Intermediate course. Learners take a deeper and more scientific look at the essential elements of good brewing, what happens when brewing parameters are manipulated, and how to master navigation of the coffee brewing control chart. Learners will gain a deeper understanding of water and its impact on brewing, specifically utilizing the ideals of aim, measure, and treatment. The most powerful tools that a professional brewer possesses are an analytical mind and the ability to process and manipulate a multitude of changing variables. These variables help the brewer to understand how best to interpret the information and then offer a solution or opinion that will improve the coffee quality, service, and delivery for their clients. A written exam tests professional course knowledge while a practical exam tests the skills described above based on different working activities carried out during the course.

Required Prerequisites	Brewing Intermediate	Recommended Prerequisites	Brewing Foundation and Sensory Skills Foundation	Delivery Method	In-person or as a combination of in-person for practical elements and distance learning for theory	Minimum Length	21 hrs	Required Exams Passing Scores	Written exam 80% Practical exam 80%
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BREWING COURSES - TOPIC OVERVIEW

Foundation	Intermediate	Professional
<p>COFFEE KNOWLEDGE Coffee Origins Sensory Impact of Species and Process Freshness</p> <p>BREWING METHODS AND EQUIPMENT Brewing Methods and Devices Grinders</p> <p>BREWING GUIDELINES Seven Essential Elements of Brewing Coffee to Water Ratio Device or Culturally Suitable Ratios Impact of Grind Setting on Extraction, Flow Rate Brewing Time Water Temperature Brew Turbulence Water Quality Filter Media Holding Hot Brewed Coffee</p> <p>BREWING PROCESS</p> <p>BREW ANALYSIS Describing the Brew Balanced Brew Optimum Extraction and Concentration SCA Brewing Control Chart</p> <p>MAINTENANCE Equipment Cleaning</p>	<p>COFFEE KNOWLEDGE History Roast Levels Freshness</p> <p>BREWING METHODS AND EQUIPMENT Grinder Burr Types</p> <p>BREWING GUIDELINES 7 Essential Elements of Brewing Coffee to Water Ratio Principles and Effect on Soluble Yield Device or Culturally Suitable Ratios Grind Setting Principles and Effect on Solubles and Flow Rate Brewing Time Water Temperature Principles Cold Brewing Brew Turbulence Water Quality Filter Media</p> <p>BREWING PROCESS Gravity Brewers Usage Brewing Processes - Principles, Extraction of Solids and Importance of Completing Brewing Cycle Wetting (Blooming): Causes, Quantities and Extraction Impact</p> <p>BREW ANALYSIS Describing the Brew Balanced Brew Optimum and Maximum Solubles Yield (Extraction) Optimum Concentration SCA Brewing Control Chart - Usage, Measuring and Calculations</p> <p>MAINTENANCE Equipment Cleaning</p>	<p>COFFEE KNOWLEDGE Roast Level</p> <p>BREWING METHODS AND EQUIPMENT Gravity Filter Shapes Recommended Bed Depth Effect of Device Shape on Bed Depth Effect of Device Shape on the Finished Brew</p> <p>BREWING GUIDELINES 7 Essential Elements of Brewing Grind Setting - Particle Size Distribution Particle Size Ranges Factor Influencing Particle Size Distribution Methods for Measuring Particle Size Distribution Effect of Particle Size Distribution on the Brew Brewing Time, Filter Media Water Temperature - Effect on Extraction Rates of Different Soluble Compounds Effect on Sensory Aspect of Brewed Coffee Brew Turbulence Water Quality - Origin, Recommendation and Requirements, Alkalinity, Total Hardness, Electrical Conductivity, Treatment Methods, Testing, Sensory Outcomes on Brewed Coffee</p> <p>BREWING PROCESS Brewing Device Usage - Gravity Brewers Brewing Processes Wetting (Blooming): Water Quantity, Wettability, Calculating Yield Based on Water Retention, Wetting Phase and Finished Brew Relationship and Wetting Application</p> <p>BREW ANALYSIS Describing the Brew Balanced Brew Solubles Yield & Concentrations</p> <p>MAINTENANCE Grinder Burrs Quality and Replacement Requirement</p> <p>BYPASS Benefits of Using Bypass Calculate, Measure and Chart Bypass Sensory Impact of Bypass</p>



GREEN COFFEE MODULE

Green coffee courses cover concepts and skills relevant to the evaluation, trade and handling of green coffee. Content of these courses include applicable aspects of botany, coffee farming, processing, grading, storage, transport, markets, certifications, contracts and more.

Green Coffee can be studied at three different levels within the SCA Coffee Skills Program:

Green Coffee Foundation

The Green Coffee Foundation course introduces basic concepts regarding the production, trade and evaluation of green coffee. Participants will learn about the specialty coffee supply chain from farm to roaster, including cultivation, harvesting, processing, drying, shipping, storage, and delivery. Within this supply chain, learners take a closer look at the principles of coffee growing, processing, grading, trade and portfolio management. Practical learning objectives and activities prepare the learner to conduct basic assessments of green coffee. A written exam tests theoretical knowledge based on Foundation course learning objectives.

Required Prerequisites	None	Recommended Prerequisites	Introduction to Coffee	Delivery Method	In-person, distance learning or as a combination of both.	Minimum Length	7 hrs	Required Exams Passing Scores	Written exam 60%
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Green Coffee Intermediate

The Green Coffee Intermediate course builds on the knowledge gained in the Green Coffee Foundation course and prepares the learner for more complex job functions found in the green coffee profession. Learners will take a deeper and balanced look at botany, agronomy, seasonality, processing, resting, shipment, storage, decaffeination, markets, certifications, transactions, and quality differentiation. Learners are also introduced to grading, defects and positive attributes as they relate to green coffee contracts. A written exam tests intermediate course knowledge while a practical exam assesses the learner's ability to grade coffee by size; identify physical defects; visually differentiate samples based on process, species and variety; detect sensory defects; and conduct basic procedures of sample analysis.

Required Prerequisites	None	Recommended Prerequisites	Introduction to Coffee, Green Foundation, and Sensory Skills Foundation	Delivery Method	In-person or as a combination of in-person for practical elements and distance learning for theory.	Minimum Length	14 hrs	Required Exams Passing Scores	Written exam 70% Practical exam 70%
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Green Coffee Professional

The Green Coffee Professional course builds on the concepts and skills introduced in the Green Coffee Intermediate course and prepares the learner for managerial job functions found in the green coffee profession. This interactive course covers key aspects of coffee botany, impact of climate change, farm management, processing methodologies, common sensory defects, sample analysis, futures markets as they relate to green trade, portfolio management, factors in the costs of green coffee production, contract considerations, targeted purchasing plans, supplier assessments and third-party accreditations. A written exam tests professional course knowledge while a practical exam assesses the learner's ability to identify certain sensorial defects, conduct sampling processes for consistency, create standards for a client, analyze samples and make purchasing decisions.

Required Prerequisites	Green Coffee Intermediate	Recommended Prerequisites	Sensory Skills Intermediate and Roasting Intermediate	Delivery Method	In-person or as a combination of in-person for practical elements and distance learning for theory	Minimum Length	21 hrs	Required Exams Passing Scores	Written exam 80% Practical exam 80%
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GREEN COFFEE COURSES – TOPIC OVERVIEW

Foundation	Intermediate	Professional
<p>BOTANY Common Varieties of Coffee Species The Global Spread of Coffee Climate Considerations for Coffee Species Physical Differences in Coffee Species</p> <p>WORLD PRODUCTION Distribution of Species Origin Statistics</p> <p>COFFEE FARMING Land and Plant Management Overview</p> <p>POST-HARVEST PROCESSING Coffee Cherry Anatomy Harvesting Practices Washed Processing Natural Processing Pulped-Natural Processing Drying Milling Grading</p> <p>MARKETS Introduction to Futures Markets Introduction to Coffee Futures Market</p> <p>STORAGE AND TRANSPORT Common Transport Systems Storage Time & Conditions</p> <p>CERTIFICATION Market Differentiation Third-Party Accreditation</p> <p>DECAFFEINATION Characteristics of Decaffeinated Coffee Characteristics of Caffeine</p> <p>EQUIPMENT AND MAINTENANCE Sizing/Grading Screens Moisture Meters</p>	<p>BOTANY Botanical Origins of Coffee Coffee Species, Varieties, Global Spread</p> <p>WORLD PRODUCTION Evolution of Production and Consumption Areas of Growth</p> <p>COFFEE FARMING Size and Location of Farms Plant Management Climate Considerations Crop Year/Seasonality Impact of Shade and Terroir</p> <p>PROCESSING METHODOLOGY Weights and Conversions Coffee Cherry Anatomy Harvesting Practices Washed Processing Natural Processing Pulped-Natural Processing Drying, Resting, Grading Risks of Drying Defects and Ochratoxin A (OTA)</p> <p>MARKETS AND CONTRACTS Market Fundamentals Arbitrage Spot Pricing Differentials, Outright Prices Contract Formulation, Incoterms</p> <p>STORAGE AND TRANSPORT Bagging Weights and Bagging Technology ICO Bag Marks Transport Considerations, Shipping Documents Landing Protocols at Port of Destination Storage and Water Activity Considerations</p> <p>CERTIFICATION Systems and Third-Party Accreditation</p> <p>DECAFFEINATION Decaffeination Workflow and Methods Legal Criteria for Decaffeination</p> <p>GREEN COFFEE ANALYSIS VENUE & OPERATIONS</p>	<p>BOTANY Genetic Diversity and Plant Breeding Research Traditional and Modern Arabica Varieties Green Coffee Seed Composition</p> <p>IMPACT OF CLIMATE CHANGE On General Horticulture, Cultivation and Production Mitigation and Adaptation Strategies</p> <p>COFFEE FARMING Soil, Input and Shade Management Pests and Diseases of Coffee</p> <p>PROCESSING METHODOLOGY Cherry Quality, Harvesting Technologies Pulping and Mucilage Removal Technologies Fermentation, Experimental Variations Water Management in Processing Drying Technologies</p> <p>GRADING Visual Defects and Sensory Defects Assessing Relative Sensorial Qualities</p> <p>STORAGE AND TRANSPORT Pre-Export Transport, Packaging and Bagging Sea Transport and Landing Procedures Regulatory Considerations</p> <p>DECAFFEINATION Position in Supply Chain and Cost Considerations</p> <p>CERTIFICATION Components and Impact of Certifications Program</p> <p>INTREPRETING PRODUCTION DATA</p> <p>FUTURES MARKETS Currency Exchanges and Market Mechanisms Deliverable Growths and Certified Stocks Spread Hedging and Options Technical Market Analysis</p> <p>PLANNING & FINANCIAL MANAGEMENT Purchasing Strategy and Risk Management Seasonality and Optimum Purchase Times Finance and Storage Costs</p>



ROASTING MODULE

The Roasting modules teaches about the roasting process, including roast cycle, roast levels, identifying defects, the physical changes that beans undergo during the roasting process, as well as workspace management and lean production.

Roasting can be studied at three different levels within the SCA Coffee Skills Program:

Roasting Foundation

The Roasting Foundation course gives the learner an understanding of the roasting process, including the physical changes that take place during the process, and how to control sensory aspects of the coffee by roasting light or dark. Learners will also gain an understanding of the basic structure of the roasting machine, and general maintenance and fire prevention. Practical learning objectives and activities prepare the learner to follow instructions, given by the trainer, for three different roasts and record relevant data and observations per roast using a suitable roast log. A written exam tests theoretical knowledge based on Foundation course learning objectives.

Required Prerequisites	None	Recommended Prerequisites	Introduction to Coffee	Delivery Method	In-person, distance learning or as a combination of both.	Minimum Length	7 hrs	Required Exams Passing Scores	Written exam 60%
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Roasting Intermediate

The Roasting Intermediate course builds upon the introductory concepts of the Foundation course. It is ideal for someone who has roasting and desires to gain a deeper understanding of the roast profile, how the profile relates to color, the relationship between roast profile and sensory expression, and the impact of development time. Learners will further explore the physical and chemical changes as well as basic thermodynamics and heat transfer that occurs during the roast. Thereafter there will be an introduction to sample roasting and a review of safety and maintenance protocols in the roasting plant. A written exam tests intermediate course knowledge while a practical exam assesses the learner's ability to roast correctly and remove the coffee at the correct color using a reference, while accurately completing the roast log form.

Required Prerequisites	None	Recommended Prerequisites	Introduction to Coffee, Roasting Foundation	Delivery Method	In-person or as a combination of in-person for practical elements and distance learning for theory.	Minimum Length	21 hrs	Required Exams Passing Scores	Written exam 70% Practical exam 70%
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Roasting Professional

The Roasting Professional course is designed to build upon the concepts and skills introduced in the Roasting Intermediate course. Learners will gain advanced skills in profile development and sensory analysis evaluation. This course dives deep into a wide range of topics including control and color matching within different and specified time limits, use and configuration of roast profile software, molecules involved in browning reactions, gas formation during roasting process, chemical causes of color and impact on solubility, visual identification of roasting defects, blending and quality control as well as an exploration of production options to help meet differing customer preferences. A written exam confirms professional course knowledge while a practical exam assesses the learner's ability to roast to different development time targets within narrow limits, score a roast color visually, identify common roast defects through cupping and finally distinguish between small and large differences in a roast profile to simulate production quality control processes.

Required Prerequisites	Roasting Intermediate	Recommended Prerequisites	Green Coffee Intermediate and Sensory Skills Intermediate	Delivery Method	In-person or as a combination of in-person for practical elements and distance learning for theory	Minimum Length	21 hrs	Required Exams Passing Scores	Written exam 80% Practical exam 80%
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ROASTING COURSES – TOPIC OVERVIEW

Foundation	Intermediate	Professional
<p>ROASTER BASICS Terminology Roaster Elements Controlling the Roast</p> <p>ROASTING PROCESS Physical Changes Producing and Using a Roast Profile Critical Events Transformational Changes Impact of Heat Taste and Aroma Using a Roast Log</p> <p>SAFETY AND MAINTENANCE Safety in Roasting Plant Roaster Cleaning</p>	<p>ROAST PROFILE Measurements and Variables Supporting the Roast Profile Heat and Temperature's Impact on the Profile Documenting the Roast Color - Measuring and Importance Roast to Color Sensory Analysis - Impact on Flavor and Color Recognizing and Documenting Cupping for Green vs for Profile Relationship between Development Time and Flavor Relationship between Profile and Roast Color Terminology</p> <p>PHYSICAL CHANGES Chemical and Physical Changes during Roasting Rate of Rise (RoR) Basics and Projection Changes in Weight and Volume Basics, Calculation and Comparison Changes in Size, Density and Moisture</p> <p>ROASTER ELEMENTS Drum and Fluid Roasters Basic of Thermodynamics of Coffee Roasting Heat Transfer</p> <p>SAMPLE ROASTING Purpose of Sample Roasting Program Types of Sample Roasters Process and Sensory Evaluation of Samples</p> <p>SAFETY AND MAINTENANCE Preventive and Maintenance Protocols Health and Safety Green and Roasted Coffee Storage Conditions</p>	<p>GREEN COFFEE Analysis of Physical Attributes Chemistry of Green Coffee - Major Chemical Components and Causes of Ochratoxins (OTA) and Health Risks</p> <p>THERMODYNAMICS IN COFFEE ROASTING Heat Transfer Modes Heat Diffusion - Basics, Diffusion from Outer to Inner Bean, Water's Role and Effect on Roast Defects</p> <p>PHYSICAL CHANGES Expansion - Glass Transition, Internal Pressure, Porosity and Structural Degradation Changes in Extractability and Solubility - Roast Degree and Speed Effects</p> <p>CHEMICAL CHANGES Chemical Reasons for Color Change Measuring Roast Color Effect on Solubility Acidity and Bitterness Changes Bitterness Changes Effect on Aromatics Acrylamide Formation</p> <p>SENSORY ANALYSIS Evaluation of Development Time Modulations Quality Control Methodology</p> <p>WHOLESALE AND RETAIL BUSINESS Customer Preferences Price calculations - Cost of Roasted Coffee, Profit Margin and Batch Size Requirements</p> <p>ROASTERY MANAGEMENT Roastery Production Design and Optimization Supply Chain Management Monitoring Roasting Process Blending Roast Degree's Effect on Cleaning and Maintenance</p>



SENSORY SKILLS MODULE

Sensory Skills courses cover concepts and skills relevant to the evaluation of coffee and related products. The content of these interactive courses includes sensory science, industry-specific protocols, common sensory attributes of coffee, physiological sensory training, implementation of sensory programs, consumer testing design, application in business and more.

Sensory Skills can be studied at three different levels within the SCA Coffee Skills Program:

Sensory Skills Foundation

The Sensory Skills Foundation course introduces the essentials of sensory evaluation in a practical and interactive manner. It investigates the way human senses influence perception and how to apply this knowledge when evaluating coffee's natural characteristics. Learners gain the ability to differentiate certain sensorial aspects of coffee including body, acidity, bitterness and more. The course introduces fragrance identification references and also focuses on the purpose and procedure for conducting an SCA cupping. Learners gain insight into identifying specialty coffee qualities, as well as an overview of how to implement this in business. Practical learning objectives and activities specifically prepare the learner to identify basic differences in coffee attributes, recall fragrance identification and set up a cupping according to the SCA Cupping Protocol. A written exam tests theoretical knowledge based on Foundation course learning objectives.

Required Prerequisites	None	Recommended Prerequisites	Introduction to Coffee	Delivery Method	In-person, distance learning or as a combination of both.	Minimum Length	7 hrs	Required Exams Passing Scores	Written exam 60%
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Sensory Skills Intermediate

The Sensory Skills Intermediate course builds on the concepts and skills introduced in the Sensory Skills Foundation course and prepares the learner for more complex job functions in the sensory evaluation of coffee and related products. This course covers a wide range of topics, including the physiology of taste and aroma; the types of sensory analysis tests, the operation of a cupping session; the diversity of coffee attributes; the use of the SCA Flavor Wheel and WCR Sensory Lexicon; and the implementation of a sensory analysis panel and session. A written exam tests intermediate course knowledge while a practical exam assesses the learner's ability to identify basic differences in coffee attributes and recall fragrance identification.

Required Prerequisites	None	Recommended Prerequisites	Introduction to Coffee, Sensory Skills Foundation and Green Coffee Foundation	Delivery Method	In-person or as a combination of in-person for practical elements and distance learning for theory.	Minimum Length	14 hrs	Required Exams Passing Scores	Written exam 70% Practical exam 70%
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Sensory Skills Professional

The Sensory Skills Professional course builds on the concepts and skills introduced in the Sensory Skills Intermediate course and prepares the learner for managerial job functions in the sensory evaluation of coffee and related products. In this interactive course, learners gain alignment with industry coffee and sensory standards; learn about the implementation of sensory evaluation in a coffee business; acquire the skills required to start identifying and evaluating qualities in specialty green coffee; and demonstrate how to accurately measure and describe coffee beverage characteristics. Participants will learn how to generate repeatable and methodical sensory measurements of coffee, along with interpretation of those results. A written exam confirms professional course knowledge while a practical exam tests the skills described above based on different working activities carried out during the course.

Required Prerequisites	Sensory Skills Intermediate	Recommended Prerequisites	Green Coffee Intermediate and Roasting Intermediate	Delivery Method	In-person or as a combination of in-person for practical elements and distance learning for theory	Minimum Length	21 hrs	Required Exams Passing Scores	Written exam 80% Practical exam 80%
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SENSORY SKILLS COURSES – TOPIC OVERVIEW

Foundation	Intermediate	Professional
<p>THEORETICAL PRINCIPLES OF SENSORY ANALYSIS Defining Sensory Analysis Role of Sensory Analysis in the Coffee Industry</p> <p>PHYSIOLOGY AND SENSORY ATTRIBUTES Physiology and Human Anatomy Basic Tastes Basic Aromas</p> <p>IDENTIFYING SENSORIAL CHARACTERISTICS IN COFFEE Taste and Body in Coffee Aromas in Coffee Communication and Language in Sensory Analysis Introduction to the SCA Flavor Wheel</p> <p>CUPPING PROTOCOL Defining Cupping The SCA Cupping Methodology Core Cupping Protocol Core Sensory Equipment within the Cupping Room</p>	<p>SENSORY ANALYSIS OVERVIEW Four Stages of Sensory Analysis Purpose and Challenges of Sensory Science Importance of Sensory Analysis in Coffee Purpose of Cupping as Related to Sensory Science</p> <p>PHYSIOLOGY AND SENSORY ATTRIBUTES Taste and Aroma Human Physiology and The Senses Impact of Psychology on Sensory Perception Evaluating Sensorial Qualities in Coffee Five Basic Tastes Common Mouthfeel Sensations Impact of Supply Chain on Flavor Positive and Negative Aromas</p> <p>TRIANGULAR TESTING Purpose of Triangle Testing Common Applications for Triangle Testing Triangle Testing Protocols and Statistics Alternative Methods for Discrimination Testing</p> <p>CUPPING SESSION OPERATIONS Key Terms in the SCA Cupping Protocol Terminology on the SCA Cupping Form Qualitative and Quantitative Scales</p> <p>CUPPING FORMS IN USE Non-SCA Cupping Forms Importance of Standardized Cupping and Protocols</p> <p>SETTING UP A SENSORY PROGRAM Definition and Purpose of a Sensory Panel Venue Requirements for a Sensory Analysis Sensory Analysis Best Practices</p> <p>SETTING UP A SENSORY PANEL Panel Selection and Proposals Panelist Screening and Training Sensory Performance Testing and Calibration</p> <p>IN/OUT TESTS vs DESCRIPTIVE TESTS In/Out Test Definition and Purpose</p> <p>ANALYTICAL TESTS Analytical Testing</p>	<p>SENSORY OVERVIEW Importance of Sensory Analysis</p> <p>PHYSIOLOGY AND SENSORY ATTRIBUTES Chain of Sensory Perception Sensation and Perception Impact of Stimuli Interactions on Perception Thresholds and Sensitivity</p> <p>BIAS & ERROR Psychological Based Biases Mitigation of Bias in Sensory Evaluation</p> <p>SCA FLAVOR WHEEL & WCR LEXICON Application and Taxonomy</p> <p>GUSTATORY ATTRIBUTES IN COFFEE Rank Intensity of Gustatory Attributes Distinguish Differences in Quality of Attributes Applied to Coffee</p> <p>MOUTHFEEL IN COFFEE</p> <p>POSITIVE AND NEGATIVE ATTRIBUTES IN COFFEE Cultural Perceptions of Flavors Distinguishing and Assessing Value in Flavor Attributes Common Negative Attributes</p> <p>SENSORY DESCRIPTIVE PROFILING Basics and Sensory Descriptive Methods Analyzing Data and Interpreting Results</p> <p>APPLYING SCA CUPPING PROTOCOL SCA Cupping Protocol Review and Application Processing Considerations with SCA Cupping Form SCA Cupping Calibration</p> <p>SENSORY PANELS & CALIBRATION APPLIED Objective Sensory Evaluation Preparing A Training Program Sensory Panel Performance, Health and Welfare</p> <p>SHELF LIFE, CONSUMER TESTING AND NEW PRODUCT DEVELOPMENT Plan for Sensory Testing Design</p>