CHAPTER 8 | STUDY GUIDE

Protect Food During Preparation

Control hands, equipment and contamination when changing from raw poultry to salad work. TCS means time/temperature control for safety. Ordinary cold holding is 41 F or below; preparation is not indefinite room-temperature storage. 2026 FDA model Code; local requirements govern. Exam transition is unconfirmed.

Recognize	Understand and apply
Task transition	Separate raw food and juices from ready-to-eat food. Clean, rinse and sanitize; then air-dry or adequately drain before ready-to-eat work. Do not cloth-dry. Wash hands after raw-food handling or dirty cleanup and before food preparation. New gloves do not replace handwashing.
Produce	Thoroughly wash raw produce in water before cutting, mixing, cooking or ready-to-eat service. The exception for whole raw produce intended for the consumer to wash does not cover a melon being sliced in the kitchen. Only use permitted produce-wash chemicals under their applicable conditions.
Prepared cold food	Cut melon, cut tomatoes and cut leafy greens require TCS controls. Keep raw fish batter and its tools away from cooked chicken for salad. A mixed batter containing raw ingredients is not automatically ready-to-eat.
Ingredient ice	Ice used as food must come from drinking water and stay protected. Ice used to cool food exteriors, bottles, packages or cooling coils cannot later become food. Fresh ingredient ice can be part of an effective cooling method.
Additives and disposition	Use approved additives within permitted levels; do not apply sulfiting agents to fresh produce intended for raw consumption. Do not disguise food quality with color or lighting. Unsafe food requires discard or an approved reconditioning procedure where permitted, not an improvised kitchen rescue.

One Counter, Two Tasks
After trimming chicken, a cook moves it and its tools away, resets the board and utensils, washes hands after cleanup, and uses clean tongs for washed lettuce. In contrast, changing gloves and spraying a dirty board with sanitizer leaves the equipment problem unresolved. The salad has no later cooking step to compensate.

Remember: Small batches, pre-chilled bowls and planned task order are useful restaurant methods. They support the required controls but do not establish a universal safe counter-time allowance.

2026 model-Code clarifications: page 12.
Memory cues and recall practice: pages 10-11.

CHAPTER 8 | STUDY GUIDE

Eggs, Juice and Highly Susceptible Populations

A highly susceptible population (HSP) combines susceptibility and setting: immunocompromised people, preschool-age children or older adults receiving care, health, assisted-living or related food services. Menu warnings and resident requests cannot waive HSP restrictions.

Recognize	Understand and apply
Egg cooking	Raw eggs broken and prepared for an individual order and served immediately use 145 F for 15 seconds. Other raw-egg preparation uses 155 F for 17 seconds or a listed equivalent under the standard route. A pooled breakfast batch is not an immediate-order preparation.
Uncooked egg recipes	For Caesar dressing, hollandaise, eggnog and similar listed foods, use pasteurized eggs/products unless the general rule's specified cooking or lawful raw/undercooked alternative applies. HSP establishments must use the required pasteurized substitutions; an advisory is not that alternative.
HSP pooled-egg exceptions	The specific exceptions cover eggs combined immediately for one consumer serving, cooked at 145 F for 15 seconds and served immediately; eggs combined as an ingredient immediately before baking and thoroughly cooked to ready-to-eat; or the specified HACCP-controlled preparation. That plan must address Salmonella control, cooking, cross-contamination, cleaning and training.
HSP prohibitions	Do not offer the prohibited raw or partially cooked animal foods, raw seed sprouts or packaged food needing required cooking as ready-to-eat. No time-only public-health control for raw eggs. Follow the stricter ready-to-eat handling provisions.
Juice	Juice packaged on site needs the specified HACCP treatment for a 5-log (99.999%) reduction or the required labeling/warning route. HSP service does not allow warning-labeled untreated juice; on-site unpackaged HSP juice needs the specified HACCP processing. For these juice rules only, the population includes children age 9 or younger receiving food in school, day care or similar custodial settings.

An Omelet Is Not a Holding Tub
Two raw eggs combined for one resident, cooked immediately to the required standard and served immediately fit the single-serving exception. Pooling eggs for later orders does not qualify, even when finished servings leave quickly.

Remember: Match recipe, timing and population. HACCP controls hazards; recipes alone do not.

FDA 2026 model Code: 3-401.11; 3-404.11; 3-801.11

CHAPTER 8 | STUDY GUIDE

Thaw Without Losing Control

Choose the method before thawing. A frozen center can have a warm outside. Slacking moderates frozen food: maintain 41 F or below, or keep it frozen. Slacking does not authorize uncontrolled counter thawing.

Recognize	Understand and apply
Refrigeration	Maintain the food at 41 F or below. Account for drip protection, available space and the time needed before service. A colder air reading alone does not verify every food portion.
Running water: setup	Completely submerge the food under running water at 70 F or below, with enough flow to agitate and float loose particles into an overflow. Keep food protected from contamination.
Running water: food limits	Thawed ready-to-eat portions may not rise above 41 F. For raw animal food requiring cooking, thawed portions may be above 41 F for no more than 4 hours, including the relevant time during water thawing and preparation for cooking, or refrigeration time needed to return to 41 F.
Cooking routes	Microwave thawing must be followed immediately by conventional cooking without interruption. Thawing as part of cooking is permitted when the complete applicable cooking process is met, including required manufacturer directions.
Narrow ready-to-eat exception	A portion of frozen ready-to-eat food may be thawed by any procedure when prepared for immediate service in response to an individual consumer order. This does not cover raw food or a batch for later service.
ROP fish	For reduced-oxygen-packaged fish labeled to remain frozen until use, remove it from the reduced-oxygen environment before refrigerator thawing. With permitted water thawing, remove it before or immediately upon completion. The 2024 Supplement changes the risk designation, not this timing.

Count the Food Exposure
Raw portions spend 2 hours above 41 F during water thawing. Adding 30 minutes of preparation and 2 hours of re-cooling totals 4.5 hours and exceeds the limit. Entering a refrigerator does not instantly return food to 41 F.

Remember: Measure the water and food as relevant. Opening a package, changing equipment or ending faucet time does not automatically erase the food's temperature history.

Select the Complete Cooking Process

Match food and method. Every part must meet the complete time-temperature pair. Measure with clean, sanitized equipment; appearance and oven settings do not prove internal results.

Recognize	Understand and apply
145 F for 15 seconds	Ordinary fish and intact meat, subject to the listed exceptions; raw eggs broken and prepared for an individual order and served immediately. Whole meat roasts, nonintact meat, stuffed foods and microwave cooking have separate provisions.
155 F for 17 seconds	Nonintact meat, including ground, injected and mechanically tenderized meat; ratites; comminuted fish and specified commercially raised/voluntarily inspected comminuted game; raw eggs outside the immediate-order route. Alternatives for this group: 145 F for 3 minutes, 150 F for 1 minute, or 158 F instantaneous.
165 F instantaneous	Poultry, baluts, specified wild game; stuffed fish, meat, pasta, poultry or ratites; stuffing containing fish, meat, poultry or ratites. Ground poultry remains poultry. This instantaneous cooking route differs from conventional hot-holding reheating.
Plant foods and packages	Plant foods for hot holding: 135 F, except as 3-401.15 provides. Packaged-food rules distinguish mandatory hazard/USDA-label cooking from other directions that say 'should.' Conditions and uncooked-use exception: page 12.
Whole-roast food pairs	The separate roast table includes 145 F for 4 minutes and 130 F for 112 minutes. Other pairs are listed in 3-401.11(B). Holding may include verified post-oven heat rise. Do not use the ordinary 145 F/15-second pair as a roast-table pair.
Whole-roast oven conditions	Preheat and maintain: still-dry, under 10 lb at least 350 F; convection, under 10 lb at least 325 F. Either dry oven, 10 lb or more: at least 250 F. High humidity, either weight: 250 F or less, with greater than 90% relative humidity for at least 1 hour measured in chamber/exit, or a moisture-impermeable bag providing 100% humidity.

The Same Fish, Different Preparation
Ordinary intact fish: 145 F/15 seconds. Minced unstuffed fish: selected 155 F/17-second route. Stuffed fish: 165 F throughout. Preparation changes the category.

Remember: Keep the category, endpoint, holding time and oven conditions together; never mix numbers from different routes.

Scored 2022 + December 2024: commercially packaged food bearing cooking instructions SHALL be cooked as directed before use in ready-to-eat foods or being offered unpackaged for human consumption, unless the instructions expressly permit uncooked consumption. **2026:** mandatory hazard/USDA branches and the residual SHOULD branch are distinguished on p. 12.

FDA 2026 model Code: 3-401.11; 3-401.13-.15

CHAPTER 8 | STUDY GUIDE

Microwave and Noncontinuous Cooking

A change in cooking method can change the required controls even when the food is the same. Microwave cooking needs a distribution-and-standing sequence. Noncontinuous cooking deliberately separates initial heating from final cooking with cooling and storage in between. It requires approved written procedures before the operation uses it.

Recognize	Understand and apply
Microwave raw animal food	Rotate or stir throughout or midway through cooking and cover to retain moisture. Heat every part to at least 165 F, then stand covered for 2 minutes. A hot spot is not proof of the whole portion.
Initial partial heating	For noncontinuous cooking, the initial heating process may last no longer than 60 minutes. Immediately cool under the cooked-TCS limits, then hold at 41 F or below or frozen.
Written controls	Obtain prior regulatory approval. Keep procedures available on site. They must describe monitoring, documentation, corrective action, identification of unfinished food and separation from ready-to-eat food.
Finish and manage next use	Before sale or service, complete the applicable 3-401.11(A)-(C) cooking process. The consumer-request raw/undercooked route in paragraph D is not a substitute. After full cooking, serve immediately, hot hold, use lawful time control, or cool again under the required limits.

A Brown Surface Can Mislead
A kitchen browns chicken under an approved process, cools it immediately and keeps it cold in a clearly identified location separated from ready-to-eat food. The finish cook must reach the poultry endpoint before service. The browned surface cannot be used as evidence that the earlier heating completed cooking. The operation's chosen label wording is a method of meeting the identification requirement, not a universal FDA label phrase.

Remember: Microwave thawing alone is a different operation: it must lead immediately to conventional cooking. Neither a consumer advisory nor a good-looking exterior can replace the required cooking process.

CHAPTER 8 | STUDY GUIDE

Raw Fish and Consumer Protection

Raw or undercooked food needs a lawful route. Parasite freezing and consumer advisories address different problems; neither substitutes for the other. Chapter 6 records provide preparation evidence.

Recognize	Understand and apply
Three freezing schedules	For nonexempt fish: -4 F or below for at least 168 hours (7 days); or freeze at -31 F or below until solid and store at -31 F or below for at least 15 hours; or freeze at -31 F or below until solid and store at -4 F or below for at least 24 hours. Marinating is not a listed substitute.
Listed exemptions	Molluscan shellfish; scallop product consisting only of the shucked adductor muscle; removed and rinsed fish eggs; and tuna species Thunnus alalunga, albacores (Code spelling; yellowfin), atlanticus, maccoyii, obesus and thynnus. Do not assume every product sold as tuna fits the list.
Aquaculture and records	Qualifying fish are raised in open-water net-pens or land-based ponds/tanks and fed formulated feed without live parasites infective to the fish. Keep the required supplier statement. Required freezing records or supplier statements, including qualifying aquaculture statements, remain for 90 days beyond service or sale.
Advisory	Disclosure identifies the affected animal-derived food and its raw/undercooked condition. A linked permitted reminder states risk or the availability of written safety information. The consumer-request route does not authorize undercooked comminuted meat from a children's menu or prohibited HSP foods.
Intact beef steak	The no-ordinary-advisory exception requires the specified source/evidence, non-HSP service, a whole-muscle steak that remains intact, top and bottom surfaces at least 145 F, and cooked color change on all external surfaces. Steaks cut on site must come from qualifying intact beef. Tenderized or injected steak is not this exception.

Verify Before Marinating
Nonexempt wild fish for ceviche needs verified parasite destruction. Citrus and a menu reminder do not replace freezing. A salmon invoice saying only farm-raised does not establish the raising-and-feed exemption.

Remember: Exemptions do not remove source, contamination, temperature or population safeguards. The The 2024 sourcing corrections are retained in the 2026 model Code.

CHAPTER 8 | STUDY GUIDE

Specialized Processing: Know the Approval Boundary

A variance is regulatory permission for a departure under stated conditions. HACCP documents hazard control, monitoring and correction. They are not interchangeable: some processes require a plan without a variance; others require both.

Recognize	Understand and apply
Preservation triggers	Smoking for preservation, curing, adding vinegar or other components for preservation, and making food non-TCS are listed variance triggers. Ordinary flavor enhancement alone is not the same trigger, but every other safety rule still applies.
Other triggers	The list also includes sprouting seeds or beans, molluscan shellfish life-support display tanks for human-consumption product, specified custom animal processing and methods the regulator determines require a variance.
Reduced oxygen	ROP of TCS food requires a variance unless the applicable 3-502.12 controls are met. Control C. botulinum growth/toxin formation and L. monocytogenes growth. A refrigerator and vacuum sealer alone do not establish eligibility.
Plan requirements and exception	Submit the required no-variance ROP HACCP plan to the regulator before implementation. The limited 3-502.12(F) plan exception requires food always labeled with production date/time, refrigerated at 41 F or below, and removed from the package in the establishment within 48 hours. The no-variance fish provision requires fish frozen before, during and after packaging and labeled to stay frozen until use.
Process review	Sous vide cooks food in a package; cook-chill packages hot cooked food for rapid cooling. The applicable plans can require detailed cooling, refrigeration, labeling, training, monitoring and records beyond ordinary leftovers. Verify the complete route before implementation.

Flavor or Shelf-Life Change?
Adding vinegar to a sauce for taste does not alone establish the preservation trigger. Adding it to claim the sauce is no longer TCS and can be held without refrigeration does. That proposed change needs the required prior variance and support, not just a familiar recipe or one pH reading.

Remember: The December 2024 Supplement adds explanatory guidance emphasizing scientific evidence for preservation requests. This course teaches recognition, not a validated operating procedure for a particular product or machine.

Cooling: Deadlines, Methods and Corrective Action

Ordinary route: check food temperature and start time. Both cooked-food limits apply; changing pans, refrigerators or shifts never resets that clock. The separately approved alternative is on page 12.

Recognize	Understand and apply
Cooked TCS food	Cool from 135 F to 70 F within 2 hours, and from 135 F to 41 F or below within 6 hours total. Reaching 70 early does not change the final six-hour deadline; reaching 41 in six hours does not forgive missing the first limit.
Ambient ingredients	TCS food prepared from room-temperature ingredients, such as opened canned tuna or reconstituted foods, must reach 41 F or below within 4 hours. It does not need a 135 F start or receive the cooked-food six-hour allowance. For processing-plant rehydration instructions, see page 12.
Effective methods	Use shallow pans, smaller portions, rapid-cooling equipment, stirred ice-water baths, heat-transferring containers, planned ingredient ice, food no more than 2 inches deep, or another effective method. Arrange for heat transfer; loosely cover, or leave uncovered only while protected from overhead contamination. Depth alone does not prove the deadlines. Separate approved alternative: page 12.
Early intervention: guidance	Improve a slow method before its deadline and retain the original clock. Annex 5, section 4(G)(7), physical PDF p.617, describes a limited cooked-hot-food intervention: when above 70 F at 2 hours or less, and within the six-hour boundary, reheat to 165 F for 15 seconds and restart with a different method. Follow the applicable local procedure and known history; this is guidance, not universal rescue permission.
Discard: guidance	Annex 5 calls for discard if cooked hot food is above 70 F after more than 2 hours, or above 41 F after more than 6 hours. For ambient-prepared ready-to-eat food, accelerate cooling while under 4 hours; discard when above 41 F after more than 4 hours. Exact deadlines still require Code targets; guidance wording is not extra time.

One Start, Two Checks
Beans at 135 F at 7 a.m. must reach 70 F by 9 a.m. and 41 F by 1 p.m. A 75 F reading at 9:15 fails regardless of later cooling.

Remember: Keep uncertain food out of service; reheating may not remove toxins. Early-check schedules are restaurant practice. The approved alternative requires all page 12 conditions.

Reheat for the Actual Next Use

Reheating requires a safe cooking, cooling and storage history; it cannot automatically repair mishandling or toxins. Choose by next use, source and heating method. Ordinary 135 F hot holding is separate from completing reheating.

Recognize	Understand and apply
Immediate individual service	Cooked and refrigerated food prepared in response to an individual consumer order and served immediately has no minimum reheating endpoint under 3-403.10. This is not a batch warmed in advance, and it does not waive earlier safety controls.
Conventional hot-holding reheat	Cooked, cooled TCS food under the standard route: all parts reach at least 165 F for 15 seconds. Reheat rapidly; no more than 2 hours while between 41 F and the required endpoint.
Microwave hot-holding reheat	Ordinary cooked/cooled TCS food: 165 F throughout, rotate or stir, cover, then stand covered for 2 minutes. The two-hour heating limit applies. The covered stand does not replace the measured endpoint.
Qualifying commercial food	Ready-to-eat TCS food commercially processed and packaged at a plant inspected by its regulator: at least 135 F for hot holding, within the same two-hour heating limit. This provision is an exception to the microwave paragraph too. Packaged raw food and restaurant-cooked leftovers do not qualify just because they were purchased.
Remaining unsliced roast	Remaining unsliced portions of a roast originally cooked under 3-401.11(B) may be reheated for hot holding using that provision's oven parameters and internal food time-temperature conditions. Sliced portions do not automatically qualify. Do not impose a hybrid of that route and the A-C routes.

One Soup, Two Destinations
Safely cooked and refrigerated house-made soup warmed for one placed order and served immediately follows the individual-service provision. A pot reheated conventionally for the line instead needs 165 F for 15 seconds within the two-hour limit before holding. Newly opened qualifying commercial ready-to-eat soup is a different product route: 135 F, even when a microwave heats it.

Remember: Check the food's history and whether it will wait hot for later orders, not merely whether it was cooked before.

CHAPTER 08 | REMEMBER THE DIFFERENCE

Cook, Cool, Reheat: Separate the Jobs

Name the process before recalling the number.

These are selected ordinary routes, not the whole cooking table. Specific roast processes, approved alternatives, food categories and microwave methods can change the required conditions.

145 F / 15 seconds	Ordinary intact fish/meat; raw eggs broken for an individual order and served immediately. Do not apply this ordinary pair to whole-roast tables, ground meat or stuffed fish.
155 F / 17 seconds	The standard route for ground or otherwise nonintact meat, comminuted fish, ratites and eggs outside the immediate-order route. Listed equivalent time-temperature pairs also exist. Ground poultry remains in the poultry category.
165 F / different purposes	Conventional initial poultry cooking: instantaneous. Ordinary reheating of cooked/cooled TCS food for hot holding: 15 seconds. Microwave raw-animal-food cooking: 165 F throughout plus the rotation/stirring, cover and 2-minute covered stand.
Cooling: 2 to 70; 6 total to 41	Ordinary cooked-TCS route: 135 F to 70 F within 2 hours; 135 F to 41 F or below within 6 hours total. Both limits apply. TCS food made from ambient ingredients reaches 41 F within 4 hours. The separately approved alternative and full conditions/exclusions are on guide page 12.

Use it on shift: Soup starts cooling at 135 F at noon. It reaches 70 F at 1:30 p.m. The final deadline is still 6 p.m., not 7:30. The first stage used 1.5 hours of the original six-hour total.

Cover the answers. Explain the reason.

Same fish: intact, minced, stuffed. Same cooking pair? No. Ordinary routes are 145 F/15 seconds; 155 F/17 seconds; and 165 F instantaneous, respectively.

Does 41 F at six hours excuse 75 F at two hours? No. Passing the final cooling checkpoint cannot erase a missed first checkpoint.

Review: earlier guide pp. 2-5, 8. **Sources:** 3-401.11-.13; 3-403.11; 3-501.14-.15. Complete category/exception details: guide pp. 2-8, 12. 2026 FDA model Food Code

CHAPTER 08 | REMEMBER THE DIFFERENCE

Reheating: Purpose Is Not Equipment

FOR ONE ORDER is different from FOR LATER HOT HOLDING.

Purpose asks what happens after reheating. Method asks how it is reheated. Establish safe original cooking, cooling and storage before using either route. No reheating rule repairs an unknown unsafe history.

Individual order; immediate service	Previously cooked and refrigerated food prepared after one consumer orders, then served immediately, may be served at any temperature under this provision. Example: a properly cooked/cooled roast-beef portion warmed for one sandwich. This is not a holding batch.
Cooked here; reheat for hot holding	Ordinary conventional route: all parts at least 165 F for 15 seconds. The time between 41 F and the required reheating endpoint may not exceed 2 hours.
Commercial RTE; reheat for hot holding	Qualifying RTE TCS food commercially processed and packaged in a plant inspected by the responsible authority: at least 135 F, with the two-hour reheating limit. A package of raw food does not qualify.
Microwave for hot holding	Ordinary route: 165 F throughout, rotate or stir, cover, then stand covered 2 minutes. The qualifying commercial-RTE exception still exists. Remaining unsliced qualifying roasts have a separate roast-process reheating route.

Use it on shift: Yesterday's correctly cooked, cooled and stored soup is reheated in a pot for a lunch-service warmer. That is reheating for hot holding, not an individual-order exception. Use the ordinary 165 F/15-second endpoint within the required time, then hold at 135 F or above.

Cover the answers. Explain the reason.

Does "any temperature" authorize lukewarm buffet holding? No. It is the specific immediate-service route for previously cooked/refrigerated food.

A microwave is a purpose? No. It is a method. Immediate service versus hot holding identifies the purpose.

Review: earlier guide pp. 9. **Sources:** 3-403.10; 3-403.11(A)-(E); 3-501.16. "Any temperature" does not waive prior safe handling. 2026 FDA model Food Code

2026 Model-Code Clarifications

Ordinary cooling still uses the limits on page 8. These are separate 2026 model provisions.

A Separately Approved Cooling Route

3-501.15(C) permits an alternative only for cooked TCS food and only if approved by the regulatory authority. All conditions apply: food is filled no more than 2 inches deep, held uncovered, and held in a refrigeration unit maintaining ambient air at 41 F (5 C) or below, equipped with an electronic system continuously monitoring BOTH time and ambient air temperature.

Excluded: food cooled under 3-401.14(B) (the initial noncontinuous-cooking cooling step), 3-502.12(D)(2)(e) (the specified cook-chill/sous-vide cooling step), or 3-501.19 (time as a public health control). Do not broaden this to all reduced-oxygen packaging. C sets no new universal product-cooling-hour maximum; it gives no automatic overnight or retrospective-rescue permission.

Manufacturer Cooking Instructions

3-401.13 requires plant food cooked for hot holding to reach 135 F or follow 3-401.15. That section applies to packaged food from a processing plant before ready-to-eat offering or human consumption:

(A) Where the manufacturer's information says pathogens were not controlled as required by 21 CFR 117.136, food SHALL receive time/temperature cooking appropriate to the identified hazard.

(B) Specified USDA safe-handling labels under 9 CFR 317.2(l) or 381.125(b): food SHALL be cooked by those directions or 3-401.11.

(C) Manufacturer's cooking directions: food SHOULD be cooked, except when those directions expressly allow consumption without cooking.

A/B are Priority. C is marked Priority Foundation, but says 'should'; do not rewrite it as 'shall'.

Commercial Dehydrated Food

When the manufacturer provides rehydration information for food dehydrated AND packaged by a processing plant, 3-501.10 says the food SHOULD be rehydrated by those instructions. It is a nondebitable recommendation, not a universal mandate for all dried food. Applicable mandatory cooking and TCS controls still apply.

FDA 2026: 3-401.13; 3-401.15(A)-(C); 3-501.10; 3-501.14-.15. Physical PDF pp. 94-100; Preface p. 14.