



WILDLAND FIRE PROFESSIONAL CERTIFICATION GUIDEBOOK

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INTRODUCTION

Association for Fire Ecology (AFE) has developed a Wildland Fire Professional Certification Program to further promote ecologically based science and management in wildland fire and fuels through accrediting professionals. This guidebook provides information for applicants about certification pathways and levels, and describes the criteria that the Professional Certification Committee uses to evaluate applicants. Using this information, applicants may self-evaluate to see if they qualify for certification in various pathways and levels before spending the money to actually apply.

AFE Wildland Fire Professional Certification Program's overarching goal is to formally identify wildland fire and fuels careers as vital professions; to set standards for the preparation of future fire and fuels professionals; and to certify members of the wildland fire and fuels professions based on their education, experience, and training qualifications.

All applicants who receive certification must agree to follow the AFE Code of Ethics (<https://fireecology.org/code-of-ethics>) once certified. Certified professionals who fail to follow this code risk losing their certification. AFE created a re-certification program in 2020 (see Re-Certification section). It is strongly advised that certified individuals be re-certified every five (5) years to keep their certification relevant. Certifications older than 10 years that are not re-certified in a timely manner will be considered lapsed.

Applicants need not be AFE members to apply for certification; all applicants who become certified will automatically become members. Attending conferences and partaking in AFE educational offerings as part of membership are ways to show continued engagement in the field of fire ecology and fire management. Therefore, it is expected that this membership will be maintained to stay certified. Any certified individual whose membership has lapsed for five years or more will be categorized as inactive. If maintaining membership represents a financial hardship, please contact AFE to apply for a fee waiver.

APPLICATION PROCESS

Individuals applying for professional certification or re-certification need to provide evidence and documentation demonstrating that they have attained the minimum requirements for education and experience for the certification level for which they are applying. It is imperative that applicants detail *all* relevant information pertaining to education and experience in their cover letters.

Applications should be submitted by September 1 using the online submission form at this link: <https://fireecology.org/professional-certification-application>. After submission, applicants will be directed to an online payment webpage to pay application fees (alternatively, there is an option to send the payment by mail). Application fees are non-refundable and non-transferrable. Applicants *will not* be evaluated if the fee is unpaid.

Applicants will receive notification of the evaluation results by December 1; successful applicants will receive a certificate and letter from the AFE President. Newly certified individuals will have their name listed on the AFE website, and they will also be recognized at an AFE's International Congress or regional conference.

Review and Decision

Each application is evaluated by a panel of reviewers from the Professional Certification Subcommittee, which includes representatives from the AFE Certification Committee and the AFE Board of Directors. The Professional Certification Subcommittee evaluates all submitted material and provides a preliminary recommendation to the AFE Board of Directors. The AFE Board of Directors makes the final certification decision.

If the review panel or AFE Board decides that there is insufficient information provided in the application, they may ask the applicant for additional information during the review process, or return the application for revision and another chance for evaluation at no cost.

Appealing a Decision

Applicants have 90 days after the date of evaluation notification to respond, in writing, with any grievances about the decision. Grievances should provide additional information that addresses specific areas identified as unsatisfactory, and clearly communicate why the evaluation of the program should be reconsidered. Send all grievances to AFE's Administrative Director (office@fireecology.net), who will work with the Professional Certification Subcommittee, the AFE Certification Committee, and the AFE Board of Directors to resolve the grievance in a timely manner.

CERTIFICATION TYPES

AFE offers a total of 11 certifications: three initial certifications, four certifications focused on management, and four certifications focused on science. An applicant may apply for more than one certification at the same time. Each certification requires varying requirements for education and experience (Table 1). Detailed information for education, core competencies, experience, and substantial contributions is provided in the next section, Evaluation Criteria and Procedure.

Table 1 An overview of the certifications available in each of three categories (Initial, Management pathway, and Science pathway), and the minimum qualifications required for each certification (education and/or core competencies, years of experience, substantial contributions, and application fee).

AFE certification type	Minimum education AND/OR core competencies	Minimum years experience	Substantial contribution	Application fee (USD)
Initial certifications				
Wildland Fire Technician	2- or 4-year degree with a focus on wildland fire	0	None	\$72
Wildland Fire Practitioner	BS	2	None	\$72
Wildland Fuels Technician	Demonstration of meeting the listed core competencies for this level OR 4-year degree with a focus on wildland fire in lieu of core competencies	1	None	\$72
Management pathway certifications				
Wildland Fire Manager	BS OR MS or PhD in Fire Management or related field	8 (BS) 5 (MS) 3 (PhD)	None	\$80
Senior Wildland Fire Manager	BS OR MS or PhD in Fire Management or related field	20 (BS) 10 (MS or PhD)	Required	\$180
Wildland Fuels Manager	Demonstration of meeting the listed core competencies for this level OR 4-year degree with a focus on wildland fire in lieu of core competencies	5	None	\$80
Senior Wildland Fuels Manager	Demonstration of meeting the listed core competencies for this level OR 4-year degree with a focus on wildland fire used in lieu of core competencies	10	Required	\$180
Science pathway certifications				
Wildland Fire Ecologist	BS OR MS or PhD in Fire Ecology/Science or related field	8 (BS) 5 (MS) 3 (PhD)	None	\$72
Senior Wildland Fire Ecologist	MS or PhD in Fire Ecology/Science or related field	10 (MS or PhD)	Required	\$180
Wildland Fuels Scientist	Demonstration of meeting the listed core competencies for this level AND	1 (MS or PhD)	None	\$72
Senior Wildland Fuels Scientist	MS or PhD in Fire Science or related field	10 (MS or PhD)	Required	\$180

EVALUATION CRITERIA AND PROCEDURE

Professional Certification Subcommittee reviewers will evaluate an applicant's qualifications in two areas: education and experience. A score will be assigned to each evaluation category (detailed later) that is used to evaluate these two broad areas. The score is based on a four-value ordinal scale:

- **0** indicates that the applicant has satisfied none of the criteria;
- **1** indicates that some of the criteria were met but not enough to be satisfactory;
- **2** indicates that the applicant has satisfactorily but not perfectly met the criteria;
- **3** indicates that the applicant perfectly met all specified criteria.

The applicant *must* score an average of **2** to receive a passing evaluation; *and*, the applicant *must not* have any **0** scores.

Education

Fire Ecology, Fire Management, Fuels Management, and Fuels Science are relatively new, developing academic areas. Individuals working in these fields often have degrees in a wide range of disciplines. In addition, college degrees will differ in design and title between institutions. For these reasons, several options are provided for degree requirements. Meeting any of the options listed for a certificate will satisfy the minimum degree requirement. Completion of degree requirements must be supported by attached transcripts.

Bachelor of Science Requirements

For certificates requiring a Bachelor of Science (B.S.) degree, applicants should have a B.S. from an AFE Certified Wildland Fire Academic Program *or* have completed coursework in the Seven Required Core Areas of Study.

AFE Certified Wildland Fire Academic Program. Applicants who received a Bachelor of Science degree from an AFE Certified Wildland Fire Academic Program will be given a score of 21 (the highest possible) for the education requirement, and the evaluator will then proceed to the experience requirement. However, if the applicant did *not* receive a Bachelor of Science degree from a certified program, or if the applicant graduated from an academic program before it was certified by AFE, the evaluator will review the information submitted for the Seven Required Core Areas of Study. A list of certified programs and the years that they were certified is available at <https://fireecology.org/certified-academic-programs>.

Seven Required Core Areas of Study. Applicants who did not graduate from an AFE Certified Wildland Fire Academic Program will be evaluated in seven required core areas of study. At least three college credits are required in each core area of study, and the evaluator will score each core area from **0** to **3** based on the information provided by the applicant. Applicants must receive an average of **2** for the seven required categories, and they must have at least a score of **1** for any given category (*i.e.*, they must have at least taken a course in that area); applicants cannot have a **0** in any one educational topic (*i.e.*, not meet education requirements for any one of the seven areas); and applicants must score at least **2** in both Fire Ecology and Fire Science & Management (Table 2).

Table 2 The seven required core areas of study in which applicants must have earned at least 3 college credits, some examples of courses that are included in the core areas of study, and the minimum score an applicant must have in each area to qualify for certification.

Core study area	Course examples	Minimum score required
Fire Ecology	Any course that focuses on fire ecology	2
Fire Science & Management	Any course that focuses on wildfire science	2
General Ecology	Any course that has ecology as the major topic	1
Statistics	Any course that has statistics as the major topic	1
Advanced Ecology and Biology	Upper division (300+) courses in ecology, botany, entomology, forestry, pathology, zoology, and related fields	1
Measurement and Analysis	Remote sensing, GIS, modeling, sampling, monitoring, and related fields	1
Environmental Sciences	Meteorology, forestry, soils, geology, hydrology, physical geography, and related fields	1

Masters or Doctoral Degree Requirements

Graduate level degrees (M.S. or Ph.D.) can be in a closely related field with a completed thesis or dissertation that immersed the candidate in fire ecology or Fire Science. The Professional Certification Subcommittee will determine whether years in graduate school reduce experience to the lower minimum shown in Table 1. Candidates are encouraged to provide enough supporting material to allow Professional Certification Subcommittee reviewers to make this assessment (*e.g.*, titles, abstracts, and citations of publications; recommendations from AFE Certified Fire Ecologists or Wildland Fire Managers).

About College Credits

Calculating College Credits. College credits represent semester credits. The AFE Professional Certification Subcommittee uses the following: 1 semester credit = 1.5 quarter credits, or 1 quarter credit = 2/3 semester credit. The Committee will review courses that are not categorized in Table 2, as needed, to assess equivalency of academic courses. Fire ecology or fire science & management courses that are held at least 3 hours per week for 14 weeks will meet the education requirement even if “fire science” or “management” is not part of the course title.

College Credit Equivalencies. In addition to the bulleted points below, the Committee will also review other advanced quantitative courses (*e.g.*, FARSITE, advanced statistics, monitoring/sampling, stand exam, forestry courses), social science courses, and participation in Prescribed Fire Training Center, Continuing Education in Fire Managements, and other programs for equivalent credit.

- Applicants who have served as an instructor for a course must submit a brief description of the course; this will meet the requirement for attending that course. Serving as a teaching assistant does not meet the requirement.

- Thesis and dissertation credits count toward fire ecology and fire management requirements if the thesis or dissertation includes those two topics. Applicants must provide a brief description of how fire ecology and management are incorporated into the thesis or dissertation if it is not clear from the title. If applicants have more than 3 semester credits of advanced ecology but no general ecology, the extra advanced ecology credits can be used to partially or fully meet any other general ecology requirement.
- Technical Fire Management (TFM) credits will be counted as academic credits if provided on an academic transcript. If transcripts are not provided, applicants must submit confirmation that the TFM courses were completed, and how many credits were given if university credits were purchased.

NWCG Course Credits

Several National Wildfire Coordinating Group (NWCG) courses can be used for partial credit to help meet the requirements for the seven required core areas of study. Please see Appendix A: NWCG Crosswalk for Educational Requirements.

Academic Equivalency Alternatives

As a distinct discipline, fire ecology is a relatively new field. Many practitioners within this broad field have a myriad of academic backgrounds from numerous older disciplines (*e.g.*, forestry, wildlife, range, geography). Moreover, many university and college systems outside of the U.S. may not offer formal coursework in the fire science fields. Furthermore, as with any rapidly evolving discipline, more and more fields are being integrated into fire ecology and management.

In recognition of this relative newness, AFE offers an alternative pathway of equal academic rigor to satisfy the fire ecology and/or the fire science & management core areas of study requirements. This “equivalency” pathway recognizes that, whereas some core areas of study are somewhat ubiquitous and most academic institutions provide them (Table 2: the last five study areas), some academic institutions do not provide the coursework needed to meet the fire ecology or fire science & management requirements. AFE recognizes that additional learning opportunities in these subject areas exist, many of which aren’t reflected on an academic transcript.

As of 2021, applicants may now substitute continuing education for formal academic coursework in the fire ecology and fire science & management core areas of study. Similar to AFE’s re-certification program (see Appendix B), applicants provide information in a table within a comprehensive letter that documents all continued education, coursework, and professional improvement that may satisfy the fire ecology and fire science & management requirements. An applicant’s continuing education activities must be equivalent to at least 3 college credits, and the applicant must receive least a score of **2** in the subject areas for fire ecology and/or fire science & management. The entire procedure is detailed in Appendix B.

Experience

Qualifying experience is the amount of time that the applicant has worked within the field of fire ecology, fire management, fuels management, or fuels science. It is vital that the applicant document how much of each job (percent of time to nearest 10%) was spent working directly on tasks and assignments related to the certification pathway for which they are applying. To prove experience qualification requirements, the applicant must submit the following with their application:

- A curriculum vitae (CV) or resumé to document related qualifying experience.
- Documentation of related experience that may consist of a combination of land stewardship, fire suppression, policy development, research employment (or volunteerism), and other work involving ecologically based fire management or wildland fuels management.

If the applicant's duties were split between fire ecology, fire management, fuels management, or fuels science—or only partially related to fire—then the applicant must estimate the percent of time that was spent working within the relevant topic area(s) for their certification type. If more than 70% of the time was spent in the relevant area, then the total time can be counted as qualifying experience.

Assistantships (research, teaching, and graduate) *do not* count toward experience prior to earning a degree. However, the teaching of college-level courses can be used to meet experience requirements. A total of 18 semester credits are considered full-time teaching. Teaching credit can be calculated as in the following example in which two 3-credit classes were taught each year for 8 years: $(6 \text{ credits taught per year} \div 18 \text{ total credits per year}) \times 8 \text{ years} = 2.7 \text{ years of experience}$.

Positions for which wildland fire suppression is the primary duty *do not* directly qualify for experience. However, these jobs are considered equivalent to 1/3 (33%) of actual time spent in the job, and the applicant must provide specific detail justifying inclusion.

Each position listed by the applicant will be rated for two attributes. First, the proportion of time spent in the job doing fire ecology, fire management, fuels management, or fuels science work is estimated to the nearest 10%, and those percent estimates are then multiplied by the length of the job in years to compute the actual time served as a fire ecologist, fire manager, fuels manager, or fuels scientist. Second, the job is scored (**0** to **3**) as to its fit to fire ecology, fire management, fuels management, or fuels science. The applicant *must* meet the time requirement for work experience *and* they must average a score of **2** for each position. Therefore, it is critical that the applicant include an estimate of the percent of time in each job that was spent performing related tasks.

Core Competencies (Wildland Fuels Certifications Only)

For those applying for wildland fuels certifications, a set of core competencies can be used in lieu of the academic degree for the Fuels Technician and Fuels Management certifications. For the Fuels Scientist certifications, both education and core competencies are required and will be assessed by the evaluators. Core competencies for all fuel certification pathways are provided in Appendix C.

It is strongly suggested that applicants thoroughly document any core competency areas in which coursework is lacking to ensure that the Evaluation Committee has sufficient information to evaluate the competency areas. If there is a question or lack of information, the Evaluation Committee will decide to not certify, but the applicant can appeal.

There are 14 competencies required for the Fuels Technician, 28 each for the Fuels Manager and the Senior Fuels Manager, and 20 each for the Fuels Scientist and Senior Fuels Scientist. Applicants will be evaluated based on the narrative that they provide to describe how they meet each competency. Evaluators will give applicants a score of **1** for each competency met, and a **0** for unmet competencies. To receive a passing score, applicants must demonstrate knowledge, skills, and experience in at least 80% of the required competency areas for their chosen certification level. The Certification Committee sets the 80% threshold to be scores of 11, 22, 22, 16, and 16 competency areas for the Fuels Technician, Fuels Manager, Senior Fuels Manager, Fuels Scientist, and Senior Fuels Scientist, respectively.

Substantial and Lasting Contribution (Senior-Level Certification Only)

Those applying for senior-level certifications must demonstrate that they have made a substantial and lasting contribution to the fields of fire science & management. It is very important that the applicant's substantial contribution be detailed. Substantial contributions are long-lasting, highly influential, and eminent contributions to the fields of wildland fire science & management. Applicants may demonstrate substantial contribution by including the following in their cover letter or webpage data fields:

- a detailed list of publications that prove eminence;
- documentation of policy change(s) made by the applicant that resulted in substantial changes in fire science & management processes;
- detailed description of role or position held by the applicant that demonstrates the scope and breadth of people supervised and decisions made in fire science & management;
- any other information to describe how the applicant has made important, broad, and far-reaching contributions to fire science & management.

The main reason applicants fail to meet the requirements for senior-level certification is because they did not document in detail how they made a substantial and long-term contribution (*i.e.*, they failed to prove their eminence in the field). The following points provide guidance on the types of contributions that are expected for each senior-level certification.

- **Senior Wildland Fire Manager.** Applicants should demonstrate an exemplary record of achievement in ecologically based fire management or fire policy. Senior Wildland Fire Managers are leaders in the wildland fire management profession who have made substantial and lasting contributions to the field, which could include holding a position of leadership in a national organization focused on fire ecology and management, or having had great influence in incorporating fire ecology into fire management. This

also could be demonstrated by having a diversity of complex fire management responsibilities, especially if these are in multiple ecosystems; by leading development and implementation of a fire management plan(s) based on ecological principles; by modeling of fire behavior and effects based on ecological principles; by the breadth of experience and demonstrated influence on incorporating fire ecology into management practices (*e.g.*, through publication and training); or by equivalent demonstration of long-term commitment to integrating ecology into fire management.

- **Senior Wildland Fire Ecologist.** Applicants are leaders in the fire science profession who have made substantial and lasting contributions to the field. Applicants should demonstrate an exemplary record of achievement in fire ecology or fire science research and education. Exemplary achievement for the Senior Wildland Fire Ecologist could include holding a position of leadership in a national organization for which work is focused on fire ecology and fire management, or authoring or co-authoring publications that are notable for their influence.
- **Senior Wildland Fuels Manager.** Applicants should demonstrate an exemplary record of achievement in wildland fuels management as a wildland fuels management program leader. Senior Wildland Fuels Managers are seen by their peers as leaders in the wildland fire/wildland fuels management profession who have made substantial and lasting contributions to the profession. This could include holding a position of leadership within a land management agency, peer group, or national organization focused on fire/wildland fuels management; or being involved with large cooperative efforts or other similar tasking. This also could be demonstrated by a diversity of complex fire management responsibilities, especially if these are in multiple ecosystems; by leading development and implementation of a fire management plan based on ecological principles; by modeling of fire behavior and effects based on ecological principles; by the breadth of experience and demonstrated influence on incorporating fire ecology into management practices (*e.g.*, through publication and training); or by equivalent demonstration of long-term commitment to integrating ecology into fire management.
- **Senior Wildland Fuels Scientist.** Applicants are leaders in the science profession who have made substantial and lasting contributions to subjects specifically related to wildland fuels research and management topics such as mechanical wildland fuels reduction, prescribed fire, and wildland fire use. Applicants should demonstrate an exemplary record of achievement in science research and education specific to wildland fuels management techniques or strategy. Exemplary achievement for the Senior Wildland Fuels Scientist could include holding a position of leadership in a national organization in which work is focused on fire and wildland fuels management, or authoring or co-authoring publications that are notable for their influence.

RE-CERTIFICATION PROGRAM

To maintain the highest professional certification standards, AFE began implementing a mandatory re-certification program in January 2023. Previously, all AFE professional certifications for all pathways lasted for the entirety of one's career in fire science. However, many employers and previously certified fire professionals questioned the integrity of a certification that was awarded more than 10 years ago because of the great advancements in research, technology, and information each year in wildland fire science & management. Therefore, AFE developed an easy, new program for re-certification every five years throughout one's career in fire science.

This re-certification will provide employers, collaborators, and evaluators valuable information on the time relevance of the certification. AFE will post the year of re-certification along with the year of the original certification at their certification website at <https://fireecology.org/certified-professionals>. Applicants can only be re-certified in the same pathway and position that they were previously certified. If an applicant wishes to enhance their certification, such as become certified in a different pathway or go for the senior level, they *must* apply as a new certification. To encourage application, the cost of re-certification is only \$25.

Obviously, there will be a transition period over the next decade, for which AFE will implement the following transitional policies:

- All certifications awarded after January 1, 2023, are current for five years (with a one-year grace period). After five (+one) years, these new certifications will need to be re-certified.
- All certifications awarded prior to 2013 are given a ten-year (10 yr) lifespan with a three-year (3 yr) grace period for re-certification. For example, if you were certified before 2010 (13 years ago as of 2023), you need to be re-certified by January 1, 2025.
- All certifications awarded after 2013 but before 2023 are given a ten-year (10 yr) lifespan, but with only a one-year (1 yr) grace period. For example, if you were certified in 2015, you would need re-certification by 2025, with a grace period of one year extending the deadline to 2026.
- If a person doesn't re-certify by the end of the one-year grace period, their name will be moved from the list of certified individuals on our website to the list for lapsed certifications. If a lapsed certification isn't recertified within 10 years, it will end up on a list of retired certifications; individuals with retired certifications will need to apply for a new certification to be re-certified.

Applying for re-certification is very easy. Applicants must prepare a letter (see example in Appendix D) that details any continued education, coursework, and professional improvement that has been completed since their last certification. Specifically, AFE re-certification will use the following point system to evaluate continuing education events:

- Full attendance at symposia, conferences, and workshops is given **1** point. Partial attendance is not given any points. Applicants must document the name, date, and host of each conference attended, and detail any role they played at the conference.
- Full attendance at eight seminars or webinars is given **1** point. Applicants must document the date, presenter, and title of all seminars that they attended.
- Presentation of four seminars or webinars is given **1** point. Applicants must document the dates and titles of their presentations, the hosts of the seminars, and any web links for a recording of the seminars.
- Completed university courses are given **1** point per credit hour. Year of completion, name of course, and the institution or university that hosted the course is required. Transcripts are not required but gladly accepted.
- Taught university courses are given **1** point per credit hour. Year of completion, name of course, and the institution or university that hosted the course is required.
- Completed NWCG courses are given **1** point per credit hour using the certification crosswalk table (Appendix A). Year of completion, name of course, and the institution that hosted the course is required.
- Taught NWCG courses will be given **1** point per credit hour using the certification crosswalk table (Appendix A). Year of completion, name of course, and the institution that hosted the course is required.
- Full attendance at training sessions is given **0.5** points for each day of attendance. Training sessions must be in the broad field of fire science. Dates of attendance, name of training session, and host institution is required. Fire Behavior training is given **0.25** points for each day of attendance.
- Published papers will be given **1** point each but only if the applicant is the senior author; **0.5** points is given for junior authors. Full citation and a link to the paper on the publisher's website is all that is needed for documentation.

The minimum requirement for re-certification is one point per each year since the last certification or re-certification. For example, if it has been five years since certification, the applicant needs at least five points to be re-certified.

It is very important that applicants supply detailed information in their letter of application to aid evaluators in their assessment of the re-certification. For example, course numbers, names, dates, and instructor names are needed to document any courses taken at universities and other institutions. If the evaluators cannot validate the activity, it will not be counted towards re-certification.

Submit your letter to AFE via the current certification application process as a special option on the certification website by September 1 of the year. The Professional Certification Subcommittee will then evaluate these submissions according to a set of general criteria that rate the extent of continuing education achieved by the applicant. It costs only \$25 to re-certify. Re-certification fees *do not* count towards AFE membership.

APPENDIX A:

NATIONAL WILDLIFE COORDINATING GROUP CROSSWALK FOR EDUCATIONAL REQUIREMENTS

There are many National Wildlife Coordinating Group (NWCG) training courses that support position performance for personnel mobilized to wildland fires and other all-hazard incidents. Some of these courses have fire ecology content and may be used to meet the academic requirements for professional certification.

Out of all of the courses offered by NWCG, only those listed in the table below are eligible for AFE credit toward certification. These credits can be added to other academic credits to meet the coursework requirements for professional certification. Information on all NWCG courses can be found here: <https://www.nwcg.gov/publications/training-courses>

NWCG course identification number and title	AFE credit	Comments
L-280 Followership to Leadership	0.25	2½-day course
L-380 Fireline Leadership	0	No specific course packet
L-381 Incident Leadership	0	Curriculum not available
M-410 Facilitative Instructor	1	36 hr of coursework
M-580 Fire in Ecosystem Management	1	40 hr of coursework
M-581 Fire Program Management	1	32 to 36 hr of coursework
RX-310 Introduction to Fire Effects	1	32 to 36 hr of coursework
RX-410 Smoke Management Techniques	0.5	
RX-510 Advanced Fire Effects	1	40 hr of coursework
S-130 Firefighter Training	0.25	
S-131 Firefighter Type 1 Training	0.25	
S-190 Introduction to Wildland Fire Behavior	0.25	
S-215 Fire Operations in the Wildland/Urban Interface	0.25	16 to 24 hr of coursework
S-219 Firing Operations	0.25	18 to 24 hr of coursework
S-244 Field Observer	0.5	28 hr of coursework
S-290 Intermediate Wildland Fire Behavior	0.5	37 hr of coursework
S-300 Extended Attack Incident Commander	0.25	22 hr of coursework
S-330 Task Force/Strike Team Leader	0.25	21 hr of coursework
S-339 Division/Group Supervisor	0.25	22 hr of coursework
S-341 GIS Specialist for Incident Management	1 to 2	72 to 92 hr of coursework
S-390 Introduction to Wildland Fire Behavior Calculations	1	42 hr of coursework
S-420 Command & General Staff	0.5	38 hr of coursework
S-430 Operations Section Chief	0.25	24 hr of coursework
S-440 Planning Section Chief	0.25	21 hr of coursework
S-443 Infrared Interpreter for Incident Management	0.5	36 hr of coursework
S-490 Advanced Fire Behavior Calculations	1	44 to 47 hr of coursework
S-491 Intermediate National Fire Danger Rating System	1	44 hr
S-495 Geospatial Fire Analysis, Interpretation and Application	4	164 hr of intensive coursework
S-520 Advanced Incident Management	2	60 hr of classroom work
S-590 Advanced Fire Behavior Interpretation	3	80 hr of classroom work
S-591 Advanced National Fire Danger Rating System	1	40 hr of coursework
S-620 Area Command	1	36 hr of classroom work

APPENDIX B:

COLLEGE EQUIVALENCY ALTERNATIVE FOR FIRE ECOLOGY AND FIRE SCIENCE & MANAGEMENT

As of 2021, applicants may substitute continuing education for formal academic coursework in fire ecology and fire science & management. Similar to AFE's re-certification program, applicants will provide a list within a letter that documents all continued education, coursework, and professional improvement that may satisfy the **fire ecology and fire science & management** requirements.

Specifically, the following categories will be used to decide the worth of continuing education activities:

- Completion of college or university courses specifically in fire ecology will get **1** credit per credit hour.
- Attendance at major symposia, conferences, and workshops will be given **1** credit each, providing the applicant attended the entire event.
- Attendance of at least eight seminars or webinars gets **1** credit.
- Completed NWCG courses get the number of credits given in the crosswalk table (Appendix A).
- Each paper published as a senior author is worth **1** credit, and each paper published as a junior author is worth **0.5** credits.

Applicants must detail their learning in the above five categories, illustrating how this scholarship covers the criteria listed below. Applicants will have to provide details and proof of their participation in these learning opportunities (if available; *e.g.*, transcripts, certificates, instructor contact, etc.). This information should make the argument as to why this is equivalent to collegiate credit. The following is the context in which the learning in the above five categories should be interpreted:

- For all individual learning, a minimum of 50% must be specifically focused on matters of either fire ecology or fire science & management (whichever professional certification is being sought).
- A minimum of 50% of all hours requires demonstration of active learning (active as opposed to merely passive learning). Example: listening to lectures or conference presentations is passive (although preparing one would be active) unless there were tests or exercises. Tests and exercises make these hours of lecture active learning events.

Applicants' continuing education activities must be equivalent to at least 3 college credits, and they must receive at least a score of 2 in the subject areas of fire ecology and/or fire science & management.

Examples

The following list of examples was developed to help applicants gauge the collegiate credit worthiness of their experiences. These are only examples and do not constitute an exhaustive list.

- **Example 1.** Completed a college or university degree. For a graduate program when coursework included thesis hours or “special problems/independent study” credits as part of a research project in a subset of either fire ecology or fire science & management, the applicant would have to provide transcripts, thesis/dissertation title and abstract, as well as an executive summary of how those credits relate to either fire ecology or fire science & management.
- **Example 2.** Attendance at an AFE International Fire Ecology and Management Congress. The applicant attended the entire conference and presented on a fire ecology or fire science & management topic. This would satisfy the active learning criteria and the need for majority focus (>50%) on the core education requirements related to fire ecology and fire management. This example would qualify the candidate for one credit in either the fire ecology or fire science & management core area of study.
- **Example 3.** Completion of an NWCG course. An applicant demonstrates attendance and completion of two NWCG courses for proposed AFE credit. The first course is M-580 Fire in Ecosystem Management and the proposed AFE credit is one. The second course is RX-510 Advanced Fire Effects and the proposed AFE credit is one. In their table, the applicant would need to specify which core area of study each credit would apply for either course. These courses could both be considered applicable to the fire ecology core area of study and would give a total of 2 credits for this area, leaving a need for one more credit to satisfy the full requirement specific to fire ecology.
- **Example 4.** Attendance at a seminar or webinar. A total of eight webinars and eight seminars were attended and documented by an applicant. All of these events required active participation through breakout groups, exercises and/or exams and quizzes. Half of these events were solely focused on fire ecology, the other half involved an equal mix of fire ecology and other resource disciplines. In this example, all is specific to the fire ecology core area of study and criteria is met. This would be equal to two of the three required credits needed for this core area of study.

Example of the required college equivalency table.

Study area	Credit	Category	Date	Place	Name or title	Organization	Contact
Fire Ecology	1	Conference	2001	San Antonio, Texas	Crossing Borders	AFE	Joe Smith Ph: ###-###-####
I attended this entire conference. I attended 15 talks that were directly concerned with fire ecology and over 12 talks that concerned fire management. I attended a fuels workshop to learn the FCCS system.							
Fire Science/ Management	0.5	NWCG course	2002	Missoula, Montana	Rx410-Smoke Management	USFS	Jane Doe Email: xxxx@usda.gov
I attend this class in January of 2002 and passed. The entire course was held at the Northern Rockies Training Center in Missoula, MT. The course leader was Reba McEntire.							
Fire Ecology	1	Senior author	2021	NA	<i>Fire ecology and a changing climate</i>	<i>Forest Ecology & Management</i>	Publication attached
I was the senior author on a <i>Forest Ecology & Management</i> publication entitled, <i>Fire ecology and a changing climate</i> .							

APPENDIX C:

DEMONSTRABLE CORE COMPETENCIES REQUIRED FOR WILDLAND FUELS CERTIFICATIONS

Fourteen (14) core competencies are required for the Wildland Fuels Technician (WFT) certification, 28 for the Wildland Fuels Manager (WFM) or Senior Wildland Fuels Manager (SWFM) certifications, and 20 for the Wildland Fuels Scientist (WFS) or Senior Wildland Fuels Scientist (SWFS) certifications. Applicants will be evaluated based on the narrative that they provide to describe how they meet each competency. Evaluators will give applicants a score of **1** for each competency met, and a **0** for unmet competencies. To receive a passing score, applicants must demonstrate knowledge, skills, and experience in at least 80% of the required competency areas for their chosen certification level. The certification committee sets the 80% threshold to be 11, 22, 22, 16, and 16 competency areas for the Fuels Technician, Fuels Manager, Senior Fuels Manager, Fuels Scientist, and Senior Fuels Scientist, respectively.

Core competencies		WFT	WFM	SWFM	WFS	SWFS
1. Sampling and Monitoring						
1.1	Measure fuel loading: Use of common fuel loading methodologies including Planar Intercept, Photoload, ocular estimation and comparison to fuel loading photoguides.	1	1	1	1	1
1.2	Measure canopy fuels: Ability to determine canopy bulk densities, canopy height, as well as other attributes leading to third dimension fire conditions.	1	1	1	1	1
1.3	Species identification: Correct identification of locally relevant and common species.	1	1	1	1	1
1.4	Dendrochronology: Understand use of tree growth patterns and meaning for management. Using an increment borer; interpreting fire return intervals, growth patterns, and stand age determination; stump interpretation.		1	1	1	1
1.5	Local-unit specific measurements: Local thresholds of concern; measurements relevant to the local ecology; custom fuel models; locally significant factors affecting fuel management projects.		1	1		
1.6	Fire behavior fuel models: Understanding of the standard 13 and 40 fuel models, as well as locally derived fuel models.	1	1	1	1	1
1.7	Fuel moisture sampling: Ability to implement and report fuel moisture sampling through oven-weight or other methodologies.	1	1	1		
1.8	Implementing sampling protocols: Field-level vegetation/project objective monitoring; fuel moisture data collection; fuel model inputs; transects/intercept protocols; canopy loading protocols.	1	1	1	1	1
1.9	Design and manage sampling protocols: Work with specialists to determine monitoring needs; design sampling protocols grounded in scientific literature; design implementable sampling designs.		1	1	1	1
1.10	Interpret and report collected data: Demonstrate understanding of collected data and its meaning for operational considerations. Report the information in databases and internal/external communication routes.		1	1	1	1
2. Fuels Management Fundamentals						
2.1	Fuel manipulation techniques: Demonstrate knowledge of standard fuels manipulation techniques such as thinning, chipping, piling, prescribed fire, etc.	1	1	1	1	1
2.2	Implement the fuels project plan: Follow the implementation document to ensure consistency with project objectives, design features, mitigation measures. Be able to communicate that to contractors, staff, and/or cooperators.	1	1	1		
2.3	Design and implement a fuels project: Participate in the planning and analysis phases of project design. Demonstrate ability to migrate intent from planning/analysis documents into implementable actions.		1	1		
2.4	Participate in prescribed burning: Show participation in prescribed fire activities in an operational, monitoring, or command capacity.	1	1	1		
2.5	Manage a prescribed fire program: Demonstrate oversight function for a prescribed fire program including planning, implementing, monitoring, and participation.		1	1		
2.6	Evaluate the success/failure of objectives: Ability to identify objectives before and after fuels treatments and compare them to planning document standards.	1	1	1	1	1
3. Fire Ecology						
3.1	Application of fire ecology: Demonstrate practical experience with incorporating fire ecology principles into project planning, implementation, and monitoring. Project consistency with known fire regimes, fire attributes, and ecosystem processes.	1	1	1	1	1
3.2	Fire effects: Demonstrate understanding of first and second order fire effects and it's application within fuels management.	1	1	1	1	1
3.3	Applied fire regime management: Demonstrate managing for a fire regime within current and projected-climate fire regime constraints.		1	1	1	1
3.4	Local fire ecology: Incorporate locally-significant fire ecology drivers into the fuels management program. Incorporate known plant responses to fire and mechanical manipulation into project design.		1	1		
3.5	Fire ecology/fuels research: Design and implement scientifically rigorous studies or monitoring that address research questions related to fire ecology or fuels management. Demonstrate a publication history of related research.				1	1
3.6	Analyze and interpret data: Perform scientifically rigorous analysis of qualitative or quantitative data related to fire ecology or fuels management. Interpret results in the context of fuels management.				1	1
4. Fuels Program Management						
4.1	Wildfire and fuels management policies: Proficient understanding of local/state/territory/federal policies that affect the applicant's sphere of fuels management operations.		1	1	1	1
4.2	Land management planning: Provide input to and/or participate in the interdisciplinary process of land management planning for fire and fuels management purposes.	1	1	1		
4.3	Involvement with environmental analysis: Direct involvement in the analyzation of proposed land management actions through writing a specialist report or other contributory technical document.		1	1		
4.4	Communicate clearly orally: Ability to verbally translate intent into action.		1	1	1	1
4.5	Communicate clearly in writing: Ability to translate intent into action through writing.		1	1	1	1
4.6	Leadership principles: Demonstrate leadership principles by modeling professionalism in fire and fuels management through actions rooted in operational and scientific integrity.	1	1	1	1	1
4.7	Fuels program budget: Oversee expenditures associated with project planning and/or implementation. Ensure that available funding is leveraged efficiently and appropriately to reduce waste and maximize public benefit.		1	1		
4.8	Cross-discipline coordination: Demonstrate an integrated process for conducting fuels management work, showing sensitivity and awareness of other ecosystem resources such as habitat, water, air quality, etc.		1	1	1	1
Total number of core competencies						
80% threshold (required minimum score to pass competency section of application)						

APPENDIX D:

SAMPLE LETTER FOR RE-CERTIFICATION

August 1, 2018

To whom it may concern:

I wish to become re-certified under the new AFE re-certification program. I was certified as a Senior Fire Ecologist in 2013 under the name Smokey T. Bear and would like to be re-certified in that same position. It has been over six years since I was certified. During that time, I have completed the following continuing education activities:

2013

- Webinar attendance – J. Bezoss. *How Amazon can help firefighting*. Hosted by Northern Rockies Fire Learning Network. January 2013 (1/8 point)
- Webinar presentation – S. Bear. *Fire prevention in the 21st century*. Sponsored by IAWF. May 12, 2013. 15 attendees. www.iawf/seminars. (1/4 point)

2014

- University course student – Fire Ecology. University of Idaho Instructor: Penny Morgan. Spring 2014. (3 points)
- NWCG course instructor – RX310, Fire Effects. Missoula, Montana. May 2014. (1 point)
- Publication – Bear, S.T. 2016. *Spatiotemporal variability of wildland fuels in US Northern Rocky Mountain forests*. *Forests* 7:129. (1 point)

2015

- University course student – Wildland Fire Management. University of Montana. Instructor: Carl Seilstat. Spring 2015. (3 points)

2016

- Nothing.

2017

- NWCG course student – RX510, Advanced Fire Effects. Tucson, Arizona. February 2017. (1 point)
- Full attendance at the 2017 AFE International Conference (1 point). Gave three presentations (3/4 point). Attended 23 presentations over the four days. Attended a day-long training session on wildland fuel sampling taught by Roger Ottmar (1/2 point).

2018

- Nothing

From the above, I estimate that, over the last six years, I have achieved over 11.5 points, or an average of at least 1 point per year, which fulfills the re-certification requirement as specified in the guidebook. I did not record all continuing education activities in the list above, so if there is a problem, I can supply more documentation of my activities since 2013. I acknowledge that I will pay a \$25 fee to be re-certified for a Senior Fire Ecologist. Remember, only you can prevent forest fires, but I've learned now that not all fires are bad.

I look forward to your decision.

With warm regards,
Smokey T. Bear
Fire Ecologist
U.S. Forest Service
Washington D.C., USA