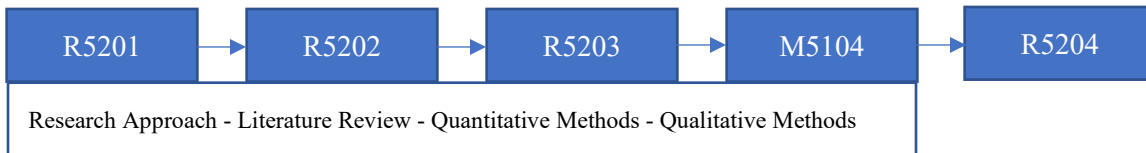


INTRODUCTION

This guide is designed to assist students enrolled in the National Fire Academy's (NFA's) Executive Fire Officer Program to fulfil the research requirements of the program. The primary objective of the guide is to describe what is expected of students as they engage in the research process. In addition, it provides guidelines for students to follow in the preparation of the Capstone Research Paper (CRP).

Students perform original research, and foundational research considerations are provided incrementally throughout the program based on *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 5th ed. (Creswell & Creswell, 2018).



Research design components are embedded in the first four EFO Program courses and culminate in *M5104 Applications in the Exercise of Leadership: Capstone I*, in which instructors evaluate and provide detailed feedback on research elements through incremental writing assignments in preparation for the final submission.

Students must complete and submit the CRP prior to arrival on campus for the last EFO Program course, *R5204 Applications in the Exercise of Leadership: Capstone II*. The CRP must be submitted electronically, through the Learning Management System (LMS) approximately two weeks prior to course's start. **CRPs must receive a total score of 22 or higher and must achieve three points in at least seven of the eight CRP sections to be considered acceptable and pass (see rubric in Appendix A).** Upon successful completion of the CRP and last resident course students are awarded the EFO Program certificate.

An NFA panel independently reviews all CRPs that receive a score of 32-40 to assess and potentially recommend exemplary EFO Program CRPs to be archived in the National Emergency Training Center's (NETC's) Library in their entirety. Students are strongly encouraged to strive for distinguished work and those who receive a score of 36-40 are strongly encouraged to pursue publication in a peer-reviewed journal.

The CRP research requirements are more stringent than the legacy EFO Program papers; however, students may find selected examples of completed Applied Research Papers (ARPs) helpful and are available by title or area of interest at the NETC Library. Note: some of the legacy ARPs are not support by Peer Reviewed Articles.

WHAT IS A CAPSTONE RESEARCH PROJECT?

The project selection for the CRP is designed to allow students to investigate a key issue or problem that has been identified as important to their fire service organization and community. The CRP is not intended to solve a task-level issue, **it must demonstrate strategic value to the organization and community.** To ensure relevancy, students are strongly encouraged to select a topic that falls within one of the critical issues discussed in the white paper: [21st Century Fire and Emergency Services](#) (Center for Public Safety Excellence [CPSE] & International

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City/County Management Association [ICMA], 2020).

The capstone research process is designed to challenge and expand executive minds as it relates to conducting thorough and responsible research to develop conclusions and recommendations based on empirical evidence. This process is intended to challenge executives to think strategically and more critically than they ever have before.

Note: The targeted community must be clearly defined within the parameters of the project and within the content of the paper. Typically, communities are defined in the context of physical or geopolitical boundaries, but the project should consider the impact of the selected topic on as many facets of the whole community as possible. The Federal Emergency Management Agency (FEMA) identifies the whole community to include individuals and families, including those with access and functional needs; businesses; faith-based and community organizations; nonprofit groups; schools and academia; media outlets; and all levels of government including state, local, tribal, territorial, and federal partners.

SELECTION OF RESEARCH TOPICS

Considerations for selecting a research topic:

1. The significance, value, and relevance of the topic or issue to the student's organization and community.
2. The relevance of the topic or issue to the critical areas within the white paper: [*21st Century Fire and Emergency Services*](#) (CPSE & ICMA, 2020).
3. The relevance of the topic or issue to U.S. Fire Administration's (USFA's) strategic goals. (Use the USFA Web site as the primary source when referring to the goal.)
4. The research depth, data collection, and writing required for the selected topic must be manageable within six months to one year.

RESEARCH PROPOSAL

Students have opportunities during *R5202 Exercise of Executive Leadership: Organization* and *R5203 Exercise of Executive Leadership: Community* courses to solicit feedback from instructors on proposed research topics. Formal review of research proposals, preliminary literature searches, and data collation occur throughout the *M5104 Applications in the Exercise of Leadership: Capstone I* course.

EVALUATION CRITERIA

The Capstone Research Paper will be evaluated on a five-point scale in each of the following eight categories:

- 1) Abstract;
- 2) Introduction;
- 3) Background and Significance;

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- 4) Literature Review;
- 5) Methodology;
- 6) Results;
- 7) Implications, Recommendations, and Conclusions; and
- 8) Overall Scholarship and Professionalism.

A comprehensive rubric that details expectations within each category follows in Appendix A. The general guidelines summarized below explain how ratings will be determined within each category.

Five-Point Rating System

- | |
|---|
| 5 = Distinguished achievement that exceeds quality indicators in all respects. Demonstrates an exceptional level of scholarship and professionalism. |
| 4 = Proficient achievement that meets all quality indicators. Demonstrates high level of scholarship and professionalism. |
| 3 = Acceptable achievement that meets all critical elements of quality indicators, with few minor errors, if any. Demonstrates adequate level of scholarship and professionalism. |
| 2 = Insufficient achievement that fails to meet critical elements of quality indicators. |
| 1 = Unsatisfactory achievement. Requires revision. |

For successful completion of the CRP project, students must earn:

- A minimum total score of **22** is required to indicate proficiency;
AND
- A minimum of **three (3) points** must be earned in at least **seven (7) of the eight (8)** CRP categories noted above.

Students are strongly encouraged to routinely review the following references throughout the EFO Program to ensure success:

- the CRP rubric in Appendix A;
- corresponding content in *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (Creswell & Creswell, 2018);
- the professional paper requirements as determined by the *Publication Manual of the American Psychological Association* (2020).

Evaluation/Assessment Policy Statement:

Students will receive extensive evaluations on writing and research components during *M5104 Applications in the Exercise of Leadership: Capstone I* and are expected to implement the feedback received for their final research paper submission in *R5204 Applications in the Exercise of Leadership: Capstone II*.

If a student does not pass the initial evaluation of the CRP made during *R5204 Applications in the Exercise of Leadership: Capstone II*, instructors are required to notify NFA immediately. Issues that are easily remedied are adjudicated by the NFA and the student may be allowed to correct and resubmit the CRP while on campus if all other capstone elements are successfully met. However, if the CPR is missing in-depth elements, students are required to complete the

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course, but do not receive a program completion certificate. The student must retake *M5104 Applications in the Exercise of Leadership: Capstone I* before resubmission.

Students have only one (1) opportunity for a resubmission. Failure to pass the secondary review shall result in removal from the program

CRP PAPER FORMAT

Required Elements of Paper:

- Title Page (separate page).
 - Certification Statement.
On a single sheet of paper, students shall sign and date the following statement: “I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.”
 - Abstract (starts on a separate page). Note: While the NFA makes an exception to APA and allows a maximum of 300 words, the format must still adhere to APA.
 - Table of Contents (starts on a separate page). Note: It should contain any appendices, figures or tables (if more than one is used) in the paper.
 - Main body of paper, including the following sections:
 - Introduction
 - Background and Significance
 - Literature Review
 - Methodology
 - Findings
 - Implications, Recommendations, and Conclusions
 - Reference list (starts on a separate page).
 - Appendices.
-

TITLE PAGE

The title page should follow the APA format for a professional paper to include the author note.

ABSTRACT

Students are required to include an abstract of their project. The abstract should summarize the problem, purpose, research method, research questions or hypothesis, procedures, results, and recommendations of the study. See rubric in Appendix A for detailed evaluation criteria.

TABLE OF CONTENTS

Chapter 1: INTRODUCTION

This section sets the stage for the research completed by the author. After reading the introduction, the reader should clearly understand the nature of the problem that led to the study, the purpose of the study, the research method chosen, and the research questions addressed or the hypothesis that was tested. See rubric in Appendix A for detailed evaluation criteria.

Chapter 2: BACKGROUND AND SIGNIFICANCE

This section is an extension of the introduction, wherein the author explains the background of the problem being researched, the past, present and probable future impact of the problem on the organization and community. Explain in considerable detail (1) the seriousness of the problem as demonstrated through references; (2) the significance of the project to the organization and community; and (3) which/how specific 21st Century Fire and EMS critical issue and EFO Program content area(s) relate to the problem and/or its hopeful resolution. Be sure to incorporate relevant historical, economic, political, cultural data, and their implications. See rubric in Appendix A for detailed evaluation criteria.

Chapter 3: LITERATURE REVIEW

This section summarizes critical findings of others who have **published documents in peer reviewed journals or textbooks** related to the research problem and clearly describes how such information influenced the author's research effort. See rubric in Appendix A for detailed evaluation criteria.

Chapter 4: METHODOLOGY

This section should be described in sufficient detail to (1) permit the evaluator to determine whether the researcher has selected and completed procedures which were appropriate for the stated purpose and method; (2) allow interested readers to replicate the project in their own organization; and (3) explain how the researcher arrived at final results. This section should clearly describe how the project progressed from beginning to end (e.g., What was done? When? By whom? Who was involved?). If interviews, focus groups, surveys, or observations were used, describe the process in detail. (i.e., when, how long, purpose, questions asked/information sought, etc.). Discuss what strategy was employed to identify the participants to ensure relevance. See Figure 1.1 A Framework for Research—The Interconnection of Worldviews, Design, and Research Methods.

This section is crucial to demonstrating credibility and to support replication by others. Documentation of each interview, focus group, or observation should be placed in an appendix. If a survey was conducted, explain the purpose and define the audience (i.e., number of total populations surveyed, number of surveys returned, etc.). Always include a copy of the actual survey as an appendix and a copy of the collective (total) results of the survey. If a sample was used, provide clear evidence of proper sample selection (i.e., appropriate size, random selection, and how you ensured that the sample was representative of the total population).

General Organization Checklist:

- √ Research Design Selected
Explain the methodology used (i.e., qualitative, quantitative, mixed-methods – and within them what approach – case study, generic qualitative, experimental, etc.)
- √ Population and Sample Size
Who is in the population, what are the inclusion criteria for participants, and what is the sample size from that population? (Qualitative sample sizes are usually around 10-15; quantitative sample sizes are generally much larger.)
- √ Instrument Being Used
Explain how the questions on the survey were developed and assessed for validity or reliability (e.g., solicited industry expert reviews, incorporated expert feedback, etc.)
- √ Research Process (Data Collection and Analysis)
Provide a step-by-step overview of the process used to collect data in a level of detail that would allow someone who is unfamiliar with this research to replicate the study exactly
- √ Ethical Considerations
Examine any ethical considerations related to the research and determine how to minimize bias, maintain participant anonymity, ensure the safety and well-being of participants, etc.

REVIEW Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (Creswell & Creswell, 2018).

- Quantitative Checklist Tables 8.1, 8.2, 8.3, 8.4, 8.5, 8.6 and sample designs
- Qualitative Checklist Tables 9.1, 9.2, 9.3, figures and examples
- Mixed Methods Checklist Tables 10.1 (read entire chapter very carefully)

Chapter 5: FINDINGS

Findings are listed in the results section. Particularly in a quantitative study, the results section is for revisiting the hypotheses and reporting whether the results supported them, and the statistical significance of the results. Whether the study supported or contradicted the hypotheses, it's always helpful to fully report what the results were. The researcher usually organizes their results section by research question or hypothesis, stating the results for each one, using statistics to show how the research question or hypothesis was answered in the study.

The qualitative results section also may be organized by the research question(s), but usually is organized by themes that emerged from the data collected. The researcher provides rich details from their observations and interviews, with detailed quotations provided to illustrate the themes identified. The results section should:

- Present and summarize results
- Address limitations experienced forming/conducting research as well as future application limitations (e.g., if the research can be replicated in a different field, with another participant demographic, etc.)
- Address how the study results compared to the findings of others discussed in the literature review
- Summarize the analysis in consideration of the results and the factors listed above
- Address the impact of the results on the organization and community

Chapter 6: IMPLICATIONS, RECOMMENDATIONS AND CONCLUSIONS

This section must include recommendations for the future:

- What needs to happen next within the organization based on research results? Ultimately, what is the community impact, if any.
- Recommendations may focus on additional research requirements, suggested program implementation methods, follow-up/evaluation proposals, etc.
- Address recommendations to the field, if applicable

All recommendations should be supported clearly by data presented in the report and should relate specifically to the original problem and purpose statements. Explain how each recommendation represents positive change and/or potential improvement within the organization and community.

Conclude with a final summary.

REFERENCES

APPENDIX

PERSONAL IDENTIFYING INFORMATION

Do NOT include personal identifying information (PII) within a CRP. CRPs are considered government documents because they are completed as part of a federally funded and sponsored program. Therefore, due to requirements of the Privacy Act, authors of CRPs are cautioned to ensure that a CRP does not include any PII.

Personal information refers to any item, collection, or grouping of information about an individual or individuals that is maintained by an agency, including, but not limited to, education, financial transactions, medical history, and employment history.

Examples of PII include date(s) of birth, resident mailing addresses, resident telephone numbers, all or portions of Social Security Numbers (SSNs), personal email addresses, ZIP Codes, account numbers, certificate/license numbers, and vehicle identifiers including license numbers. Authors are also cautioned to not include any other unique identifying

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number(s) or characteristic(s) or any information where it is reasonably foreseeable that the information could be linked with other information to identify the individual(s). An example of a nuanced PII could be participation of one of only two individuals in a department.

References

Center for Public Safety Excellence & International City/County Management Association. (2020). *21st century fire and emergency services*. [White paper]. <https://www.cpse.org/wp-content/uploads/2020/07/21st-Century-Fire-and-Emergency-Services-White-Paper-Final-07.15.20.pdf>

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. (5th ed.). Los Angeles: SAGE.

Publication manual of the American Psychological Association : The official guide to APA style. (7th ed.). (2020). American Psychological Association.

Appendix A

CAPSTONE RESEARCH PAPER EVALUATION CRITERIA

CRP Section	Unsatisfactory 1--2 points	Proficient 3 – 4 points	Distinguished All items must be present 5 points
ABSTRACT	<ul style="list-style-type: none"> • Missing two or more items from the Proficient category OR • Jumps from point to point that confuses the reader OR • Contains citations, undefined abbreviations or acronyms, results or interpretations that are not discussed in the text 	<ul style="list-style-type: none"> • Accurate and self-contained (300 words maximum) • Problem statement defined with objectives and intent • Purpose statement defined • Research method defined • Research questions or hypothesis summarized or paraphrased • Procedures summarized • Results summarized • Recommendations summarized • Contains important key words 	<ul style="list-style-type: none"> • All criteria from the Proficient category is met and exemplary • Correct tense is used throughout • Correct focus on own work and not too much on the work of others • Accessible to a large audience by elimination of jargon (does not only use fire-specific terminology) • Optimal use of key words
INTRODUCTION	<ul style="list-style-type: none"> • Missing two or more items from the Proficient category OR • Contains all items from the Proficient category, but two or more items are incomplete or confusing 	<ul style="list-style-type: none"> • Problem statement clearly and precisely defined • Utilized appropriate academic (peer-reviewed) references in support of the problem statement • Purpose statement clearly and precisely defined • Specific research method identified <hr/> <ul style="list-style-type: none"> • Research questions/hypothesis clearly stated OR • Hypothesis appropriate for research method identified 	<ul style="list-style-type: none"> • All criteria from the Proficient category is met and exemplary • Identifies deficiencies in existing studies • Demonstrates relevancy and interests the reader

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BACKGROUND AND SIGNIFICANCE	<ul style="list-style-type: none"> • Missing two or more items from the Proficient category OR • Contains all items from the Proficient category, but two or more items are incomplete or confusing 	<ul style="list-style-type: none"> • Clear and complete background analysis of problem provided • Sufficient evidence provided to justify study from an organizational and community perspective, based on past, present, and probable future impact • Relevant financial, cultural, and ethical considerations and demographic and historical data present • Original research methodology communicated • Definite linkage established between the research problem and the critical issues identified in <i>21st Century Fire and Emergency Services</i> (CPSE & ICMA, 2020) and the goals of the EFO Program 	<ul style="list-style-type: none"> • All criteria from the Proficient category is met and exemplary • Uses an appropriate contemporary event, case study, etc. to demonstrate relevancy and secure interest
LITERATURE REVIEW	<ul style="list-style-type: none"> • Missing one or more items from the Proficient category OR • A clear mismatch between any sources and purpose signaling a lack of understanding 	<ul style="list-style-type: none"> • A minimum of eight peer reviewed journals or textbooks cited (this does not include EFOP textbooks OR previously written EFO papers or ARP's) which may be cited, but do not fulfil this requirement) • A minimum of two peer reviewed journals or textbooks cited outside of fire publications (public health, business, social science, psychology, etc.) • Citations are diverse, from a variety of authors and sources • Findings of others are incorporated • 80% of the sources were published within the last seven years • Linkage from sources to research questions/hypothesis and methodology is clearly defined 	<ul style="list-style-type: none"> • All criteria from the Proficient category is met and exemplary AND • demonstrates a comprehensive review that involves at least three other fields of associated research and clearly links them to the issues impacting fire/student's research

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<p>METHODOLOGY</p>	<p>Missing two or more items from the Proficient category</p>	<ul style="list-style-type: none"> • Research approach is appropriate • Research questions/hypothesis are focused, measurable, and clearly articulated • The selected data gathering instruments/processes are appropriate • Procedures sufficiently delineated to permit replication • Variables and limitations noted to include explanation of data that was excluded from the study or statement that all data was used • Explanation presented of considerations used to assure validity and reliability during the data collection, analysis, and interpretation • Includes results and explanation of inferential statistics, with clear relationship to the research questions/hypothesis • Conflicts of interest are not addressed • Addresses how subject privacy information is protected • Addresses potential negative impact on participants and how that was avoided • Addresses the security of data and integrity of analysis • Ethical considerations addressed <p>IF qualitative:</p> <ul style="list-style-type: none"> • Types/strategies are appropriate for the research questions • Appropriate data collection type, with pertinent explanations • The selection/recruitment of participants is purposeful and of adequate numbers <p>IF quantitative:</p> <ul style="list-style-type: none"> • The population, sampling design, and sample is appropriate • Descriptive statistics of participant demographics, responses and/or observations • Nonexperimental variables controlled (experimental only) • The statistical test is appropriate for the variables and purpose of the study 	<ul style="list-style-type: none"> • All criteria from the Proficient category is met and exemplary AND • Research questions are focused, measurable, and clearly articulated AND • The selected data gathering instruments/processes are appropriate and the process is explained thoroughly AND • Appropriate data collection type, and thorough explanation of the choice, pros/cons as applicable to this study AND • The variables are correct, with proper explanation of how they relate to the study AND • Conflicts of interest have been properly justified and thoroughly explained AND • Addresses how subject privacy information is protected AND • Thoroughly addresses ethical considerations to include the removal of bias and measures to ensure participant safety
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<p align="center">RESULTS</p>	<p>Missing two or more items from the Proficient category</p>	<ul style="list-style-type: none"> • Results/findings clearly and concisely stated in narrative form • Results/finding descriptions organized by research question • Detailed results of all procedures provided • Specific answers to original research questions provided or explanation of whether or not original hypothesis was supported by results, as appropriate • Comprehensive analysis of data included • Tables and/or figures are clearly presented, correctly labeled, and contain appropriate data • Final product(s) of action research included as an Appendix 	<ul style="list-style-type: none"> • All criteria from the Proficient category is met and exemplary AND • Thorough description of relevant research results per research question upon which to build an explanation of the subsequent sections AND • Thorough evaluation and interpretation of the results as it relates to the original hypotheses or problem, from which appropriate conclusions can be drawn
<p align="center">IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSIONS</p>	<p>Missing two or more items from the Proficient category</p>	<ul style="list-style-type: none"> • Recommendations logically flowed from the results • Recommendations were supported by the data collected • Recommendations provided for the organization and for future readers • “Reasoned and justifiable commentary on the importance” of findings and the impact on the organization and community (APA, 2020, p. 91) • Recommendations for changing your original assumptions or methods that can/should be made for future study (include a statement if this is not the case) 	<ul style="list-style-type: none"> • All criteria from the Proficient category is met and exemplary AND • Thorough discussion of the generalizability / external validity of the study AND • Thorough discussion of the shortcomings, limitations, or barriers within your study AND • Thorough "reasoned and justifiable commentary on the importance of your findings," including the core contributions of the study

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<p align="center">OVERALL SCHOLARSHIP AND PROFESSIONALISM</p>	<p>Missing two or more items from the Proficient category</p>	<ul style="list-style-type: none"> • Theories, principles, and procedures were presented and used properly • Information and data is accurate and up-to-date • Correct grammar, punctuation, spelling, sentence structure, and typing/editorial style (>4 minor errors) • Reference lists are in-text references documented • properly used of APA (2020) Guidelines • Title reflects nature of study; correct NFA title page format followed • Table of Contents included all major headings; a list of tables provided if more than one used; and Appendices were listed and defined • Certification statement signed and included 	<ul style="list-style-type: none"> • All criteria from the Proficient category is met and exemplary AND • Theories, principles, and procedures were extensive and convincing AND • No errors in punctuation, spelling, and/or capitalization. No word choice errors. Correct tense used throughout. AND • All citations and references were in APA format
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