Academic Program Review for

Fire Science Associate Degrees: Fire Science Option and Emergency Medical Services Options

and

Fire Officer Development Certificate 2005-2006 Academic Year
Name of Program: Fire Science: Fire Science Option, Emergency Services Option, and Fire Officer Development Certificate

Program Coordinator/Department Chair: Robert Tucker, Coordinator and Debra Murphy, Acting Chair of Social Science and Human Services Department

Academic program review is part of the institution's overall planning process. It is to be viewed as a critical self-study designed to systematically review the achievement of a program's purpose and goals.

Signatures:

_________________________________________ Date
Program Coordinator/Department Chair

_________________________________________ Date
Vice President, Academic and Student Affairs

_________________________________________ Date
President
Academic Program Review

I. Program Mission and Goals

II. Data Analysis and Market Analysis/Influence

III. Program/Student Outcomes

IV. Program Design

V. Faculty

VI. Recruitment

VII. Program Resources/Needs

VIII. Summary

Attachments

Tab 1 (Section IV. 4) Department Approved Syllabi
Tab 2 (Section IV. 18) Selected Instructor Course Materials
Tab 3 (Section VII. 2) Fire Science-Related Library Resources
I: Program Mission and Goals

1. State the mission of the program.
   **Mission Statement – Fire Science Option**
   Cape Cod Community College Fire Science Program - **Fire Science Option** offers the technical and general educational requirements to assist in the development of the knowledge, skills, and abilities required to perform competently in the fire protection field. Covering the many facets of fire protection and related emergency response issues the student will be better able to meet the ever challenging world of public safety, interact with peers, the public, and elected officials. While centered on municipal fire protection, many aspects of private sector fire protection are also presented.

   The program provides the student with knowledge, skills, and abilities needed for career opportunities in fire protection and for transfer to a Bachelor’s degree program in fire protection or related fields. Fire protection careers include those in the fire service, emergency management, and operations.

   **Mission Statement – Emergency Medical Services Option**
   Cape Cod Community College Fire Science Program – **Emergency Medical Services Option** offers the technical and general education requirements to assist in the development of the knowledge, skills, and abilities to perform competently in the emergency medical services operations within the fire protection field. Covering basic to the advanced and related response issues the student will treat the injured or ill according to established standards and protocols, interact with peers, patients, family members, and elected officials.

   The program provides the student with knowledge, skills, and abilities needed for career opportunities in emergency medical services, fire protection, and for transfer to a Bachelor’s degree program in emergency medical services, fire protection, or related fields. Emergency medical services careers include those in the fire service, emergency management, operations, and other pre-hospital intervention settings.

   **Mission Statement – Fire Officer Development Certificate**
   Cape Cod Community College Fire Officer Development Certificate offers the technical and general education requirements to assist currently employed fire service personnel to develop the knowledge, skills and abilities to perform competently on officer promotional exams and to assume progressive leadership positions in the fire protection field.

2. Describe the relationship of the program’s mission to the overall mission of the College.
   The program mission statements reflect the following key points in the College mission statement: The Fire Science Program supports workforce and economic needs. Each of the 15 towns on Cape Cod and those of Nantucket, Martha’s Vineyard, Plymouth, and Wareham support fire departments which require entry-level fire protection and emergency medical services personnel educated to current national and state standards and the professional development and training for personnel to qualify for advanced rank and responsibility within those departments.

   The mission statement also supports the College priority which promotes opportunities for students to transfer to baccalaureate programs in fire protection, management, emergency medical services and other health related professions.

3. Is the program accredited by an accrediting agency?
No, however, the EMT and Paramedic programs are accredited by Massachusetts Office of Emergency Services within the Department of Public Health. The College subcontracts with Cape and Islands Emergency Services Systems to deliver these programs.

4. **Please identify the external consultant for this program.**
   Phillip E. Blye, M.A., former Chief of the Easton Fire Department and Department Chair and Instructor of Fire Science Technology at Massasoit Community College.

   Program Review Team:
   - Robert Tucker, Coordinator (Captain, Dennis Fire Department)
   - Chief Dennis Newman, Retired (Sandwich Fire Department)
   - Dean Melanson (Deputy Chief, Hyannis Fire Department)
   - Len Nelson, Director, Cape Cod and Islands EMS System, Inc.
   - Debra Murphy, Chair, Social Sciences and Human Services Department
   - David Ziemba, Associate Dean of Academic Research
   - Susan Miller, Associate Dean Business, Health Sciences, Social Sciences, and Human Services

5. **Who participates in planning the program (e.g. employers, faculty, students, others)?**

   Program planning for this evening program is managed by a part-time coordinator and a very active team of adjunct faculty and the Fire Science Program Advisory Committee with staff assistance from the Associate Dean of Business, Social Sciences and Human Services, and Health Sciences.

   The Advisory Committee includes executive officers of 3 fire departments, ranking officers from area departments, experts in the fire protection system field, the Executive Director of the Cape and Islands EMS system, a retired fire protection officer, the program coordinator as liaison, and three adjunct faculty from the program.
II: Data Analysis and Market Analysis/Influence

1. Identify the important trends, patterns, and issues that emerge through the enrollment, retention, academic progress, and graduation data that were provided. Matriculated student enrollment in the fire science programs (fire science and emergency medical services options) from the period of Fall 2001 through Fall 2003 demonstrate an increase in enrollment in both the Fire Science and Emergency Medical Services Options from 83 in 2001 to 96 matriculated students in 2003. The number of matriculated students in fall 2004 dropped to 85. Members of the program review team note that many individuals seeking the fire science degree begin by completing the Emergency Medical Technician and Paramedic Certification programs. Local fire chiefs agree that the number of vacancies throughout the Cape and Islands is limited and departments prefer qualified candidates who have achieved emergency medical services certifications over those without those credentials. Therefore the data indicate consistent enrollments and completions within the emergency medical services certificate programs. Once hired by a department, and having completed the state fire academy, individuals return to CCCC seeking the degree to assist their opportunities for promotion. Area departments tend to have low turnover in personnel and vacancies among the officer ranks. With few promotional opportunities available, enrollment in the Fire Officer Development Option has been historically low.

Of significant note is that the course completion rates for the fire science courses consistently meet or exceed the 75% performance indicator identified by the Board of Higher Education. A drop in the completion rate for FSC100 and FSC101 noted in Fall 2003-2004 and Spring 2003-2004 semesters respectively triggered an analysis of these two introductory courses by the Advisory Committee in a decision to change prerequisites for those two courses. (See Syllabi for FSC 100 and FSC 101)

While enrollment in the fire science degree program's two options has averaged 81.7 students since 1998, graduations for that period averaged 5.1. While the review team notes that historically, students in the fire science degree programs proceed very slowly through the program; all agree that there is room to develop ways to deliver the program in a sequence and schedule including distance learning as appropriate to facilitate graduation rates.

Graduation rates for the Fire Officer Development Certificate are low for the reasons given above. Completions of the Paramedic Certificate Program are consistently high because this is the recommended career path for new fire protection and emergency medical services personnel and the program consists of three courses which can be completed in three semesters. The number of graduates (1) for 2003 reflects that students were not asked to apply and therefore matriculate so they did not request graduation and certificates were not awarded.
2. Comment on significant findings that emerge from any Student Transfer and Employment Follow-up data that has been collected.

2004 Graduate Report
There were three graduates of the Fire Science Program in 2004, two who completed the Fire Science Option (FS) and one graduate from the Emergency Medical Services Option (EMS). The EMS graduate transferred to UMASS at Lowell and one of the two FS graduates is the current Fire Chief for the town of Orleans. The third FS graduate is currently employed in the fire protection field in Iowa.

2003 Graduate Report
There were 7 graduates from the Fire Science /EMS Options combined. Of the four graduates responding to follow-up, three report that they are working in the fire protection field and one graduate continued education at Bristol Community College.

3. Summarize findings from any student/employer/transfer surveys and/or focus groups.

- Transfer: Data from 2004 graduates reveals that there were three graduates, of which two transferred to other colleges, and two are working in the fire protection field
- Employer Survey: See Section III. 7.
- Community College Survey of Student Engagement (CCSSE)

Summary of Sampling of Fire Science Students

Overview: The Survey measures how engaged students are in their academic experience. Research has shown that those students who are more engaged in their academic experience are more likely to succeed.

Administration:
As part of the Fire Science Program Review, the College surveyed all the students in all fire science classes that were offered in the Spring of 2005 (3). Twenty eight students responded to the survey. The survey was administered in late February 2005.

The results for these fire science students were not analyzed by CCSSE. CCSSE provided the raw data to the college and an analysis was performed by the Office of Academic Research.

Demographics of Survey Participants
- Age: The students surveyed had an average age of 27.
- Gender: The students were 86% male and 14% female.
- Ethnicity/Race: 96% of the students were Caucasian.
- Marital Status: 57% were single and 43% were married.
- Native Language: 96 % spoke English as their first language.
• 86% work more than 30 hours per week for pay
• 32% care for children more than 30 hours per week
• 57% use their own income to pay their tuition
• 21% receive most of their tuition through their employer
• Do not participate in co-curricular activities

**Significant Findings:**

**Learning Experiences:**
• Students indicated that they asked many questions in class.
• They also indicated that they received prompt feedback from faculty on their assignments.
• They also participated in group assignments.
• They worked on a paper or project that required integrating ideas or information from various sources.
• Very few students study in groups.
• These students hardly ever skip class.

**Support Services**
• Very few students use support services, (advising, financial aid, career services, tutoring)
• Very few have ever attended an orientation
• Very few have ever been part of a learning community

**Attitudes toward the College**
• 100% indicated that they would recommend this college to a friend or family member.
• The group had a very high rating for their entire experience at the college, 3.3 on a scale of 1 to 4.
• Most rate their student relationships high (5.3 on a scale of 1-7)
• Most rate their faculty relationships high (5.9 on a scale of 1-7)
• Most rate their relationships with administrators slightly above average (4.2 on a scale of 1-7)

4. Provide a definition of this employment sector – the specific occupations together with the education and skills that are required.

According to the U.S. Department of Labor (DOL) Bureau of Labor Statistics, firefighters help protect the public against fire and a variety of other emergencies. Personnel work in a variety of settings, including urban and suburban areas, airports, chemical plants, other industrial sites, and rural areas and many fire fighters are also trained and certified to intervene in pre-hospital emergency medical incidents. The DOL also indicates that firefighters work in hazardous materials units that are trained for the control, prevention,
and clean-up of oil spills and other hazardous materials incidents. Between alarms, firefighters, clean and maintain equipment, conduct practice drills, and fire inspections, and participate in physical fitness activities. They also prepare written reports on fire incidents and participate in professional development activities to keep current with technological advances in the field. Fire fighters may also perform fire protection functions such as those of the fire inspector. This role involves inspection to prevent fire incidents and to assure compliance with fire codes. Another role opportunity for fire fighters is that of a fire investigator or one who determines the origin and cause of fires and applies the scientific crime scene investigation principles and practices to fire-related incidents.

5. Using relevant labor statistics including local sources indicate whether employment opportunities in this field are expected to increase or decrease over the next 3-5 years.

According to Massachusetts Employment and Training by Occupation and Training for 2000 and Projected 2010 (Massachusetts Division of Unemployment and Training):

<table>
<thead>
<tr>
<th>Employment 2000</th>
<th>Employment 2010</th>
<th>New Jobs #/Growth Rate</th>
<th>Replacement/ Openings</th>
<th>Total Job openings</th>
<th>Education Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firefighters 10,930</td>
<td>11,130</td>
<td>200/ 2%</td>
<td>2,830</td>
<td>3,040</td>
<td>Long OJT</td>
</tr>
<tr>
<td>Fire Inspector &amp; investigator 180</td>
<td>190</td>
<td>10/ 6%</td>
<td>50</td>
<td>60</td>
<td>Work experience in related occupation</td>
</tr>
<tr>
<td>EMT/Paramedic 5,700</td>
<td>6,620</td>
<td>920/ 16%</td>
<td>1440</td>
<td>2370</td>
<td>Post-Secondary/Vocational</td>
</tr>
</tbody>
</table>

According to the Occupational Outlook Handbook, 2004-2005 Edition, positions for fire fighter positions are expected to increase 10 to 20% nationally due to conversion of volunteer to paid positions and the need to replace fire fighters who retire, transfer or move into other management professions or related careers. Even departments facing challenging financial times tend to delay equipment purchases and replacements rather reductions in force.

The Occupational Outlook Handbook 2004-2005 notes that job growth in emergency medical services field is expected to grow at a rate of 21-35% nationally. This faster than average job growth for other professions is attributed to population growth, urbanization, and a preference for full-time paid emergency medical services personnel rather than volunteers. Aging baby boomers will contribute to the need for services as well as for the need to replace current workers due to retirement, stress, career advancement, and other related careers.
Local labor trends based upon the responses of 12 local fire departments indicate a range of current full-time personnel of 21 - 118 which is related to overall size of towns and departments. Projected full time personnel needs for 2010 range from 20 to 142. Given the significant impact of the Baby Boom on local departments, all responding chiefs anticipate the need to replace staff due to retirements. As some communities continue to grow in population new positions are anticipated as well.

6. Explain existing mechanisms that allow for input from industry. (Cite examples of how this has had an impact on the program over the last 3-5 years.)

The advisory committee meets twice a year and is composed of executive officers in local fire departments as well as representatives from the emergency medical services network and other private fire protection consulting firms. Many of these individuals hold positions on the local, state, and national fire protection commissions and boards and provide regular input into the relevance and effectiveness of the curriculum.

Beginning with this program review, the advisory committee surveyed the potential employers of our students using a tool which asks the evaluator to indicate how effective employee performance is perceived to be when compared with the stated program outcomes. (See Section II – 3.) The Advisory Committee also serves as the curriculum committee for the program. Each meeting is involved with reviewing and revising program elements, course prerequisite and revising courses as indicated in Section VI. 5, 7, and 11 of this document.

7. List the program advisory committee members and attach copies of recent minutes of committee meetings.

Fire Science Program Advisory Committee Members

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Address</th>
<th>City</th>
<th>State</th>
<th>Zip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caputo</td>
<td>Anthony</td>
<td>3 Highridge Lane</td>
<td>Sandwich</td>
<td>MA</td>
<td>02563</td>
</tr>
<tr>
<td>Edwards</td>
<td>Steven</td>
<td>P.O. Box 1029</td>
<td>Orleans</td>
<td>MA</td>
<td>02662</td>
</tr>
<tr>
<td>Farrington</td>
<td>John</td>
<td>1875 Route 28</td>
<td>Centerville</td>
<td>MA</td>
<td>02632</td>
</tr>
<tr>
<td>Johnson</td>
<td>Robert</td>
<td>42 Wilma's Way</td>
<td>East Harwich</td>
<td>MA</td>
<td>02645</td>
</tr>
<tr>
<td>Melanson</td>
<td>Dean</td>
<td>8 Hamden Circle</td>
<td>Hyannis</td>
<td>MA</td>
<td>02601</td>
</tr>
<tr>
<td>Nelson</td>
<td>Leonard</td>
<td>P.O. Box 1197</td>
<td>Hyannis</td>
<td>MA</td>
<td>02601</td>
</tr>
<tr>
<td>Newman</td>
<td>Dennis</td>
<td>P.O. Box 58</td>
<td>Forestdale</td>
<td>MA</td>
<td>02644</td>
</tr>
<tr>
<td>Palmer</td>
<td>Dana</td>
<td>2 Palmer Circle</td>
<td>Bourndale</td>
<td>MA</td>
<td>02532</td>
</tr>
<tr>
<td>Pina</td>
<td>Barry</td>
<td>46 Ebenezer</td>
<td>Osterville</td>
<td>MA</td>
<td>02655</td>
</tr>
</tbody>
</table>

Fire Protection Engineer
Fire Chief, Orleans
Fire Chief, COMM
FF PM Harwich Fire Dept.
Deputy Chief, Hyannis F.D.
Director, CIEMMS
Chief, Sandwich FD (Retired)
FF Bourne Fire Dept.
<table>
<thead>
<tr>
<th>Drive</th>
<th>Address</th>
<th>Town</th>
<th>State</th>
<th>Zip</th>
<th>Position</th>
</tr>
</thead>
</table>
| Drive FF Hyannis Fire Dept
| Reis Ralph            | 14 Pine Terrace         | E. Sandwich | MA   | 02537 | Lt Boston FD Retired          |
| Stubbs Lisa           | 25 Galway Lane          | Eastham | MA   | 02642 | FF PM Eastham FD              |
| Tucker Robert         | 32 Dolly Street         | S. Dennis | MA   | 02660 | Capt Dennis FD                |
| Young Michael         | 216 Carver Road         | Plymouth | MA   | 02360 | Capt Plymouth FD              |
III: Program/Student Outcomes

1. What are the course completion rates for students in this program?
Of the 30 fire science courses offered in the period including Fall 2001-2002 through Spring 2004-2005, The mean course completion rate for all courses offered during this period is 88.3% with a mode of 89. Successful completion is defined as the percentage of students who complete the course and earn a grade of “D” or better. When compared to the 75% minimum expected performance measure adopted by the Board of Higher Education (BHE), fire science course completion rates overall meet or exceed the 75% threshold expected by the BHE.

In response to the decrease in course completion rates identified in the first course or FSC100 Introduction to Fire Protection or 81%, 74%, and 78% in 2001, 2003, and 2004 respectively, the faculty and advisory committee changed the prerequisites from none to developmental English courses or satisfactory scores on the assessment of basic skills for English.
## Fire Science Course Completions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fall</td>
<td>Spring</td>
<td>Fall</td>
<td>Spring</td>
<td>Fall</td>
<td>Spring</td>
<td>Fall</td>
<td>Spring</td>
<td>Fall</td>
<td>Spring</td>
</tr>
<tr>
<td><code>[Course Code]</code></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSN 100/110/100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduction to Fire Protection</td>
<td>14</td>
<td>18</td>
<td>78%</td>
<td>14</td>
<td>18</td>
<td>78%</td>
<td>14</td>
<td>18</td>
<td>78%</td>
<td>14</td>
</tr>
<tr>
<td>FSN 101/111/101</td>
<td>24</td>
<td>26</td>
<td>92%</td>
<td>24</td>
<td>26</td>
<td>92%</td>
<td>24</td>
<td>26</td>
<td>92%</td>
<td>24</td>
</tr>
<tr>
<td>Fund of Fire Protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSN 102/112/102</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire Protection Syst &amp; Equip</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC 103/113/103</td>
<td>20</td>
<td>20</td>
<td>100%</td>
<td>17</td>
<td>22</td>
<td>77%</td>
<td>14</td>
<td>16</td>
<td>88%</td>
<td>14</td>
</tr>
<tr>
<td>Fire Fighting Tactics &amp; Strat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC 104/114/104</td>
<td>8</td>
<td>9</td>
<td>88%</td>
<td>9</td>
<td>9</td>
<td>100%</td>
<td>14</td>
<td>15</td>
<td>93%</td>
<td>14</td>
</tr>
<tr>
<td>Hyd Cans for the Fire Service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC 105/115/105</td>
<td>27</td>
<td>28</td>
<td>96%</td>
<td>17</td>
<td>19</td>
<td>89%</td>
<td>22</td>
<td>23</td>
<td>96%</td>
<td>22</td>
</tr>
<tr>
<td>Hazexious Materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC 107/117/107</td>
<td>30</td>
<td>33</td>
<td>91%</td>
<td>17</td>
<td>22</td>
<td>74%</td>
<td>14</td>
<td>16</td>
<td>88%</td>
<td>14</td>
</tr>
<tr>
<td>Hydraulics for the Fire Service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC 106/116/106</td>
<td>14</td>
<td>16</td>
<td>88%</td>
<td>15</td>
<td>17</td>
<td>68%</td>
<td>13</td>
<td>15</td>
<td>94%</td>
<td>13</td>
</tr>
<tr>
<td>Fire Investigation &amp; Evidence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC 109/119/109</td>
<td>12</td>
<td>13</td>
<td>92%</td>
<td>26</td>
<td>26</td>
<td>100%</td>
<td>17</td>
<td>18</td>
<td>94%</td>
<td>17</td>
</tr>
<tr>
<td>Fire Dept Mgmt &amp; Planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC 110/120/110</td>
<td>27</td>
<td>27</td>
<td>100%</td>
<td>16</td>
<td>18</td>
<td>89%</td>
<td>17</td>
<td>18</td>
<td>94%</td>
<td>17</td>
</tr>
<tr>
<td>Fire Codes &amp; Ordinances</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC 112/122/112</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation Emergencies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC 114/124/114</td>
<td>10</td>
<td>11</td>
<td>91%</td>
<td>12</td>
<td>13</td>
<td>92%</td>
<td>6</td>
<td>7</td>
<td>86%</td>
<td>6</td>
</tr>
<tr>
<td>Fire Company Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC 115/125/115</td>
<td>11</td>
<td>13</td>
<td>85%</td>
<td>11</td>
<td>13</td>
<td>85%</td>
<td>11</td>
<td>13</td>
<td>85%</td>
<td>11</td>
</tr>
<tr>
<td>Intro to Technical Rescue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC 130/140/130</td>
<td>11</td>
<td>13</td>
<td>85%</td>
<td>11</td>
<td>13</td>
<td>85%</td>
<td>11</td>
<td>13</td>
<td>85%</td>
<td>11</td>
</tr>
<tr>
<td>Shipboard Firefighting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Number of students who completed course for credit
** Number of students enrolled in course
*** Percentage rate of completions
2. What is the Fall to Spring Persistence Rate for students who are matriculated in this program?
For the AS in Fire Science – (see Table below) the Fall to Spring Persistence rate has averaged 80% for the last five years. This is significantly higher than the college average which is about 60%.

Students have very good grade point averages (over 3.0), with the exception of the Academic year 2003-04 cohorts.

For the AS Fire Science/EMS Option – The Fall to Spring Persistence Rate is 70%. This group also has very high grade point averages.

---

### AS Fire Science 2005

<table>
<thead>
<tr>
<th></th>
<th>F00-01</th>
<th>S00-01</th>
<th>F01-02</th>
<th>S01-02</th>
<th>F02-03</th>
<th>S02-03</th>
<th>F03-04</th>
<th>S03-04</th>
<th>F04-05</th>
<th>S04-05</th>
<th>F05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicants</td>
<td>10</td>
<td>1</td>
<td>9</td>
<td>6</td>
<td>15</td>
<td>6</td>
<td>15</td>
<td>7</td>
<td>19</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>Initial # New Matric</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>5</td>
<td>10</td>
<td>4</td>
<td>13</td>
<td>6</td>
<td>14</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td># Minority Students</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Semesters After:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>4/66%</td>
<td>1/100%</td>
<td>3/50%</td>
<td>5/100%</td>
<td>10/100%</td>
<td>4/100%</td>
<td>9/69%</td>
<td>2/33%</td>
<td>13/93%</td>
<td>4/100%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3/50%</td>
<td>1/100%</td>
<td>3/50%</td>
<td>4/80%</td>
<td>8/80%</td>
<td>2/50%</td>
<td>6/46%</td>
<td>2/33%</td>
<td>11/79%</td>
<td>2/50%</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2/33%</td>
<td>1/100%</td>
<td>3/50%</td>
<td>3/60%</td>
<td>6/60%</td>
<td>2/50%</td>
<td>6/46%</td>
<td>2/33%</td>
<td>10/71%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2/33%</td>
<td>1/100%</td>
<td>3/50%</td>
<td>3/60%</td>
<td>6/60%</td>
<td>2/50%</td>
<td>6/46%</td>
<td>2/33%</td>
<td>10/71%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2/33%</td>
<td>1/100%</td>
<td>3/50%</td>
<td>2/40%</td>
<td>6/60%</td>
<td>2/50%</td>
<td>3/23%</td>
<td>3/23%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2/33%</td>
<td>1/100%</td>
<td>3/50%</td>
<td>2/40%</td>
<td>6/60%</td>
<td>2/50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2/33%</td>
<td>1/100%</td>
<td>3/50%</td>
<td>2/40%</td>
<td>5/50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2/33%</td>
<td>1/100%</td>
<td>2/33%</td>
<td>2/40%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>2/33%</td>
<td>1/100%</td>
<td>2/33%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>2/33%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC Graduate</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Other Graduate</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Certificate Grad</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Avg Cum</td>
<td>3.27</td>
<td>3.92</td>
<td>3.12</td>
<td>2.99</td>
<td>3.28</td>
<td>3.13</td>
<td>2.68</td>
<td>2.42</td>
<td>3.12</td>
<td>3.24</td>
<td></td>
</tr>
</tbody>
</table>

### AS Fire Science/EMS

<table>
<thead>
<tr>
<th></th>
<th>F00-01</th>
<th>S00-01</th>
<th>F01-02</th>
<th>S01-02</th>
<th>F02-03</th>
<th>S02-03</th>
<th>F03-04</th>
<th>S03-04</th>
<th>F04-05</th>
<th>S04-05</th>
<th>F05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicants</td>
<td>19</td>
<td>7</td>
<td>16</td>
<td>8</td>
<td>14</td>
<td>5</td>
<td>14</td>
<td>10</td>
<td>15</td>
<td>11</td>
<td>34</td>
</tr>
<tr>
<td>Initial # New Matric</td>
<td>17</td>
<td>6</td>
<td>14</td>
<td>8</td>
<td>12</td>
<td>5</td>
<td>13</td>
<td>8</td>
<td>13</td>
<td>8</td>
<td>26</td>
</tr>
<tr>
<td># Minority Students</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Semesters After:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>12/71%</td>
<td>4/66%</td>
<td>9/64%</td>
<td>7/88%</td>
<td>9/75%</td>
<td>1/20%</td>
<td>8/62%</td>
<td>2/25%</td>
<td>8/62%</td>
<td>2/25%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>10/59%</td>
<td>3/50%</td>
<td>8/57%</td>
<td>6/75%</td>
<td>9/75%</td>
<td>1/20%</td>
<td>5/38%</td>
<td>2/25%</td>
<td>8/62%</td>
<td>2/25%</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>8/47%</td>
<td>3/50%</td>
<td>7/50%</td>
<td>6/75%</td>
<td>6/50%</td>
<td>1/20%</td>
<td>3/23%</td>
<td>2/25%</td>
<td>8/62%</td>
<td>2/25%</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>8/47%</td>
<td>2/33%</td>
<td>7/50%</td>
<td>5/63%</td>
<td>4/33%</td>
<td>1/20%</td>
<td>2/13%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>6/35%</td>
<td>2/33%</td>
<td>6/43%</td>
<td>4/50%</td>
<td>1/17%</td>
<td>1/20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>5/29%</td>
<td>1/16%</td>
<td>5/36%</td>
<td>3/38%</td>
<td>0/0%</td>
<td>1/20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>4/23%</td>
<td>1/16%</td>
<td>4/29%</td>
<td>0/0%</td>
<td>0/0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>4/23%</td>
<td>0/0%</td>
<td>1/77%</td>
<td>0/0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>2/13%</td>
<td>0/0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1/6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEM Graduate</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Other Graduate</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Certificate Grad</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Avg Cum</td>
<td>3.34</td>
<td>3.41</td>
<td>3.31</td>
<td>3.53</td>
<td>3.12</td>
<td>3.37</td>
<td>3.2</td>
<td>3.42</td>
<td>3.13</td>
<td>3.26</td>
<td></td>
</tr>
</tbody>
</table>
3. What is the Fall to Fall Persistence Rate for students who are matriculated in this program?
For the As Fire Science option the Fall to Fall Persistence Rate averages 57% for the five year period.
For the Fire Science/EMS Option the Fall to Fall Persistence Rate is 36% for the five year period.

4. Using the most recent Cape Cod Community College Graduate Report, provide evidence that graduates of the program are employed in the career for which the program prepared them.

2004 Graduate Report
There were three graduates of the Fire Science Program in 2004, two of who completed the Fire Science Option (FS) and one graduate from the Emergency Medical Services Option (EMS). The EMS graduate transferred to UMASS at Lowell and one of the two FS graduates is the current Fire Chief for the town of Orleans. The third FS graduate is currently employed in the fire protection field in Iowa.
5. In the table below, list the major program goals and outcomes in measurable terms.

<table>
<thead>
<tr>
<th>Program Goals and Outcomes</th>
<th>Courses with related program outcomes</th>
<th>Competencies for courses</th>
</tr>
</thead>
</table>
| Upon successful completion of the Fire Science Program- Fire Science Option Program, the student will: (Indicate what students know and be able to do at the end of the program) | 1.1 FSC100 Introduction to Fire Protection | 1.1a. Discuss the impact of fire on loss of property and life  
1.1b. Discuss the history of fire protection  
1.1c. Identify the organization and function of federal, state, and private fire protection careers  
1.1d. Review organization and function of municipal fire defenses |
| 1. Apply principles and current practices of fire protection techniques | 1.2 FSC101 Fundamentals of Fire Prevention | 1.2a. Discuss the needs, levels, and types of fire prevention  
1.2b. Discuss the types of fire inspections and surveys  
1.2c. Identify the purpose and procedures for special inspections  
1.2d. Identify major fire protection organizations  
1.2e. Describe the types and causes of fire hazards  
1.2f. Describe the types of building construction materials and implications for fire prevention  
1.2g. Identify processes, documentation, and equipment used in fire inspections  
1.2h. Compare and contrast types, purposes, benefits, and risks of fire prevention/protection systems  
1.2i. Discuss State Fire Codes and Laws  
1.2j. Identify the role of local and state authorities in the investigation of fires  
1.2k. Observe equipment, personnel, and procedures use |
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Objectives</th>
</tr>
</thead>
</table>
| 1.3 FSC102 | Fire Protection Systems and Equipment            | 1.3a. Describe various hazards that require detection and/or suppression systems.  
            |                                                  | 1.3b. Describe current and past detection and suppression systems.          |
|             |                                                  | 1.3c. Describe the limitations of current and past detection and suppression systems. |
|             |                                                  | 1.3d. Describe the environments that the above systems are best suited for.   |
|             |                                                  | 1.3e. Understand effectiveness of Fire Protection systems in Loss Prevention |
|             |                                                  | 1.3f. Know basic workings of various Fire protection Systems                |
|             |                                                  | 1.3g. Know basic plan review items for Fire Protection Systems              |

| 1.4 FSC103 | Fire Fighting Tactics and Strategy               | 1.4a. Describe how a fire develops and spreads throughout a structure.  
            |                                                  | 1.4b. Describe resource requirements.                                    |
|             |                                                  | 1.4c. Define terms and practices used by Fire Officers to mitigate incidents they must respond to. |
|             |                                                  | 1.4d. Define terms used by Federal, State and Local agencies when they are to interact with one another. |
|             |                                                  | 1.4e. Discuss the application of the Incident Command System in Fire Operations |
|             |                                                  | 1.4f. Organize effective multiple fire company option plans.              |
|             |                                                  | 1.4g. Describe the concept of Fire Ground Safety                         |
|             |                                                  | 1.4h. Evaluate support functions needed to conduct effective fire suppression |

| 1.5 FSC104 | Building Construction for the Fire Service       | 1.5a. Describe the major elements of common building construction.  
            |                                                  | 1.5b. Describe the impact of fire on the various construction types.    |
|             |                                                  | 1.5c. Analyze effect on buildings from fire                               |

<p>| 1.6 FSC105 | Hazardous Materials                              | 1.6a. Identify, name, and understand the basic                           |</p>
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Course Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6b</td>
<td>Comprehend the basic chemical and physical</td>
<td>1.6b. Comprehend the basic chemical and physical properties of gases, liquids and solids, and predict the behavior of a substance under adverse conditions.</td>
</tr>
<tr>
<td></td>
<td>properties of gases, liquids and solids, and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>predict the behavior of a substance under</td>
<td></td>
</tr>
<tr>
<td></td>
<td>adverse conditions</td>
<td></td>
</tr>
<tr>
<td>1.6c</td>
<td>Describe commonly used identification systems</td>
<td>1.6c. Describe commonly used identification systems for hazardous materials.</td>
</tr>
<tr>
<td></td>
<td>for hazardous materials</td>
<td></td>
</tr>
<tr>
<td>1.6d</td>
<td>Apply appropriate fire fighting tactics and</td>
<td>1.6d. Apply appropriate fire fighting tactics and strategies used in connection with hazardous materials.</td>
</tr>
<tr>
<td></td>
<td>strategies used in connection with hazardous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>materials.</td>
<td></td>
</tr>
<tr>
<td>1.7</td>
<td>FSC107 Hydraulics for the Fire Service</td>
<td></td>
</tr>
<tr>
<td>1.7a</td>
<td>Define basic principles of fluid movement</td>
<td>1.7a. Define basic principles of fluid movement.</td>
</tr>
<tr>
<td>1.7b</td>
<td>Describe the basic components of a municipal</td>
<td>1.7b. Describe the basic components of a municipal water supply system.</td>
</tr>
<tr>
<td></td>
<td>water supply system</td>
<td></td>
</tr>
<tr>
<td>1.7c</td>
<td>Describe the main components of a fire pump and</td>
<td>1.7c. Describe the main components of a fire pump and how each works.</td>
</tr>
<tr>
<td></td>
<td>how each works</td>
<td></td>
</tr>
<tr>
<td>1.7d</td>
<td>Describe how water is moved through hose lines,</td>
<td>1.7d. Describe how water is moved through hose lines, appliances and nozzles to produce an effective firefighting stream.</td>
</tr>
<tr>
<td></td>
<td>appliances and nozzles to produce an effective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>firefighting stream</td>
<td></td>
</tr>
<tr>
<td>1.7e</td>
<td>Describe the limitations of water supply and</td>
<td>1.7e. Describe the limitations of water supply and pumping apparatus.</td>
</tr>
<tr>
<td></td>
<td>pumping apparatus</td>
<td></td>
</tr>
<tr>
<td>1.8</td>
<td>FSC108 Fire Investigation and Evidence</td>
<td></td>
</tr>
<tr>
<td>1.8a</td>
<td>Describe the causes of incendiary fires.</td>
<td>1.8a. Describe the causes of incendiary fires.</td>
</tr>
<tr>
<td>1.8b</td>
<td>Discuss basic chemistry of fire for purposes of</td>
<td>1.8b. Discuss basic chemistry of fire for purposes of understanding fire growth and behavior.</td>
</tr>
<tr>
<td></td>
<td>understanding fire growth and behavior</td>
<td></td>
</tr>
<tr>
<td>1.8c</td>
<td>Discuss legal aspects of Arson</td>
<td>1.8c. Discuss legal aspects of Arson.</td>
</tr>
<tr>
<td>1.8d</td>
<td>Discuss essential techniques of Fire Investigation</td>
<td>1.8d. Discuss essential techniques of Fire Investigation.</td>
</tr>
<tr>
<td>1.8e</td>
<td>Identify basic motives of Arson</td>
<td>1.8e. Identify basic motives of Arson.</td>
</tr>
<tr>
<td>1.8f</td>
<td>Identify area of origin at a fire scene</td>
<td>1.8f. Identify area of origin at a fire scene.</td>
</tr>
<tr>
<td>1.9 FSC109 Fire Department Management and Planning</td>
<td>1.8g. Describe the criminal investigation process as used in fire investigation</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.9a. Describe basic organizational and management principles.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.9b. Define practices used to plan and maintain a modern Fire Department</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.9c. Develop a budget preparation and management plan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.9d. Analyze the relationship of labor management in the fire service</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.9e. Discuss interaction of various municipal agencies with the fire department</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.10 FSC110 Fire Codes and Ordinances</th>
<th>1.10a. Describe the development of codes and ordinances that effect fire and life safety.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.10b. Know where to locate the appropriate code, law, etc., for a specific hazard.</td>
</tr>
<tr>
<td></td>
<td>1.10c. Describe the process code and ordinance enforcement</td>
</tr>
<tr>
<td></td>
<td>1.10d. Interpret the process of development, interpretation, and application of fire code(s).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.11 FSC114 Fire Company Management</th>
<th>1.11a. Discuss the importance of an effective fire company</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.11b. Contrast the roles and responsibilities of a firefighter to that of a company officer.</td>
</tr>
<tr>
<td></td>
<td>1.11c. Discuss supervisory practices and concepts of a company officer.</td>
</tr>
<tr>
<td></td>
<td>1.11d. Define the company officer's role and responsibilities in the pre-fire planning process</td>
</tr>
<tr>
<td></td>
<td>1.11e. Identify fire scene management concepts</td>
</tr>
</tbody>
</table>

<p>| 1.12 FSC115 Introduction to Technical Rescue | 1.12a. Discuss concepts, regulations, equipment, and procedures used in |</p>
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.12b</td>
<td>1.12b. Describe practices and procedures for scene safety.</td>
<td></td>
</tr>
<tr>
<td>1.12c</td>
<td>1.12c. Recognize equipment and procedures needed for various Technical Rescue Operations.</td>
<td></td>
</tr>
<tr>
<td>1.13a</td>
<td>1.13a. Be able to communicate with local, State and Federal authorities prior to and during a major incident</td>
<td></td>
</tr>
<tr>
<td>1.13b</td>
<td>1.13b. Discuss the planning and implementation of an operating strategy that can be expended from a basic incident to that of one capable of handling a major multi-agency multi-jurisdiction incident</td>
<td></td>
</tr>
<tr>
<td>1.14a</td>
<td>1.14a. Describe the similarities and dissimilarities of tactics and strategies used in fighting fire aboard sea-going vessels with land-based fire resources.</td>
<td></td>
</tr>
<tr>
<td>1.14b</td>
<td>1.14b. Describe ship construction and problems that would affect fire control.</td>
<td></td>
</tr>
<tr>
<td>1.14c</td>
<td>1.14c. Describe the terms used to effectively interact with shipboard crews, federal and state agencies</td>
<td></td>
</tr>
<tr>
<td>1.15a</td>
<td>1.15a. Analyze research information and best practices in fire science incident management</td>
<td></td>
</tr>
<tr>
<td>1.15b</td>
<td>1.15b. Use research on issues and best practices in fire science to critically examine current issues in fire science and incident management</td>
<td></td>
</tr>
<tr>
<td>1.15c</td>
<td>1.15c. Integrate oral communication, written communication, and group activities in examination of current issues in fire science and incident management.</td>
<td></td>
</tr>
<tr>
<td>1.15d</td>
<td>1.15d. Use fire science</td>
<td></td>
</tr>
</tbody>
</table>
### 2. Use effective communication skills to build relationships with co-workers, supervisors, and members of the community

- 2.1 FSC100 Introduction to Fire Protection
- 2.2 FSC101 Fundamentals of Fire Protection
- 2.3 FSC102 Fire Protection Systems and Equipment
- 2.4 FSC103 Fire Fighting Tactics and Strategy
- 2.5 FSC104 Building Construction for the Fire Service
- 2.6 FSC105 Hazardous Materials
- 2.7 FSC107 Hydraulics for the Fire Service
- 2.8 FSC108 Fire Investigation and Evidence
- 2.9 FSC109 Fire Department Management and Planning
- 2.10 FSC110 Fire Codes and Ordinances
- 2.11 FSC114 Fire Company Management
- 2.12 FSC115 Introduction to Technical Rescue
- 2.13 FSC120 Introduction to Incident Management
- 2.14 FSC200 Special topics in Fire Science
- 2.15 FSC130 Shipboard firefighting
- 2.16 EMS101 Emergency Medical Technician: EMT
- 2.17 EMS201 Paramedic I
- 2.18 EMS202 Paramedic II

See above for course learning outcomes.

### 3. Perform the role of a fire protection officer using

- 3.1 FSC101 Fundamentals of Fire Protection

See above for course learning outcomes.
<table>
<thead>
<tr>
<th>established standards, guidelines, and regulations</th>
<th>Fire Prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2 FSC102 Fire Protection Systems and Equipment</td>
<td>4.1 FSC100 Introduction to Fire Protection</td>
</tr>
<tr>
<td>3.3 FSC103 Fire Fighting Tactics and Strategy</td>
<td>4.2 FSC101 Fundamentals of Fire Prevention</td>
</tr>
<tr>
<td>3.4 FSC104 Building Construction for the Fire Service</td>
<td>4.3 FSC103 Fire Fighting Tactics and Strategy</td>
</tr>
<tr>
<td>3.5 FSC105 Hazardous Materials</td>
<td>4.4 FSC105 Hazardous Materials</td>
</tr>
<tr>
<td>3.6 FSC108 Fire Investigation and Evidence</td>
<td>4.5 FSC108 Fire Investigation and Evidence</td>
</tr>
<tr>
<td>3.7 FSC109 Fire Department Management and Planning</td>
<td>4.6 FSC109 Fire Department Management and Planning</td>
</tr>
<tr>
<td>3.8 FSC110 Fire Codes and Ordinances</td>
<td>4.7 FSC110 Fire Codes and Ordinances</td>
</tr>
<tr>
<td>3.9 FSC114 Fire Company Management</td>
<td>4.8 FSC114 Fire Company Management</td>
</tr>
<tr>
<td>3.10 FSC115 Introduction to Technical Rescue</td>
<td>4.9 FSC115 Introduction to Technical Rescue</td>
</tr>
<tr>
<td>3.11 FSC120 Introduction to Incident Management</td>
<td>4.10 FSC120 Introduction to Incident Management</td>
</tr>
<tr>
<td>3.12 FSC200 Special Topics in Fire Science</td>
<td>4.11 FSC200 Special topics in Fire Science</td>
</tr>
</tbody>
</table>

4. Observe, analyze, assess, and implement an effective operating plan in fire protection, emergency medical services, and major disaster situations

| 4.1 FSC100 Introduction to Fire Protection |
| 4.2 FSC101 Fundamentals of Fire Prevention |
| 4.3 FSC103 Fire Fighting Tactics and Strategy |
| 4.4 FSC105 Hazardous Materials |
| 4.5 FSC108 Fire Investigation and Evidence |
| 4.6 FSC109 Fire Department Management and Planning |
| 4.7 FSC110 Fire Codes and Ordinances |
| 4.8 FSC114 Fire Company Management |
| 4.9 FSC115 Introduction to Technical Rescue |
| 4.10 FSC120 Introduction to Incident Management |
| 4.11 FSC200 Special topics in Fire Science |
| 4.12 FSC130 Shipboard firefighting |
| 4.13 EMS101 Emergency |

See above for course learning outcomes
| 5. Apply principles and practices of specialized technical operations teams | 5.1 FSC101 Fundamentals of Fire Prevention  
5.2 FSC102 Fire Protection Systems and Equipment  
5.3 FSC103 Fire Fighting Tactics and Strategy  
5.4 FSC105 Hazardous Materials  
5.5 FSC108 Fire Investigation and Evidence  
5.6 FSC109 Fire Department Management and Planning  
5.7 FSC114 Fire Company Management  
5.8 FSC115 Introduction to Technical Rescue  
5.9 FSC120 Introduction to Incident Management  
5.10 FSC200 Special topics in Fire Science  
5.11 FSC130 Shipboard firefighting  
5.13 EMS101 Emergency Medical Technician: EMT  
5.14 EMS201 Paramedic I  
5.15 EMS202 Paramedic II | See above for course learning outcomes |
|---|---|---|
| 6. Integrate leadership principles to perform roles of increasing responsibility within fire protection organizations | 6.1 FSC103 Fire Fighting Tactics and Strategy  
6.2 FSC104 Building Construction for the Fire Service  
6.3 FSC105 Hazardous Materials  
6.4 FSC107 Hydraulics for the Fire Service  
6.5 FSC108 Fire Investigation and Evidence  
6.6 FSC109 Fire Department Management and Planning  
6.7 FSC110 Fire Codes and Ordinances  
6.8 FSC114 Fire Company Management | See above for course learning outcomes |
6.9 FSC115 Introduction to Technical Rescue
6.10 FSC120 Introduction to Incident Management
6.11 FSC130 Shipboard firefighting
6.12 EMS101 Emergency Medical Technician: EMT
6.13 EMS201 Paramedic I
6.14 EMS202 Paramedic II

6. How the competencies are verified (e.g. tests, portfolios, capstone courses)?
Written examinations, term papers, and projects in selected courses (FSC107 Hydraulics for Fire Service and FSC114 Fire Company Management).

7. Provide evidence that employers are satisfied that graduates of the program have the skills and abilities to function as competent employees.

Cape Cod Community College
Fire Science Program
Employer Survey

Cape Cod Community College must assure that graduates of its Fire Science Program are able to function competently in entry-level and advanced positions in fire protection and emergency medical services organizations. Curriculum development is a continuous process and must reflect work force needs, professional trends, standards, and regulations.
Please take a few minutes to complete this survey. Use the self-stamped envelope provided to return your survey.

Thank you for your cooperation.
Sincerely,
Robert M. Tucker, Coordinator

<table>
<thead>
<tr>
<th>Fire Science Program Outcomes</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
<th>Unable to Evaluate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduates apply principles and current practices of fire protection techniques</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduates use effective communication skills to build relationships with co-workers, supervisors, and members of the community</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduates perform the role of a fire protection officer using established standards, guidelines, and regulations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduates observe, analyze, assess, and implement an effective operating plan in fire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Department: 
Number of current positions 
Projected number of Positions in 2010

<table>
<thead>
<tr>
<th>Fire Science Program Outcomes</th>
<th>Overall Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Graduates apply principles and current practices of fire protection techniques</td>
<td>3.1</td>
</tr>
<tr>
<td>2. Graduates use effective communication skills to build relationships with co-workers, supervisors, and members of the community</td>
<td>2.6</td>
</tr>
<tr>
<td>3. Graduates perform the role of a fire protection officer using established standards, guidelines, and regulations</td>
<td>2.7</td>
</tr>
<tr>
<td>4. Graduates observe, analyze, assess, and implement an effective operating plan in fire protection and emergency medical service situations</td>
<td>2.8</td>
</tr>
<tr>
<td>5. Graduates apply principles and practices of specialized technical operations teams</td>
<td>2.2</td>
</tr>
<tr>
<td>6. Graduates integrate leadership principles to perform roles of increasing responsibilities within fire protection and emergency medical service organizations</td>
<td>2.5</td>
</tr>
</tbody>
</table>

The survey was sent to the chief executive officers of the 24 fire departments and one private ambulance service in the service area. Twelve departments returned surveys for a 48% response rate. Graduate performance on all six program outcomes was rated from good (Score of 2) to excellent (Score of 4) with one department rating performance on three outcomes as poor (#2, 4, and 6) and several items were not evaluated. The mean of the sum of all outcomes scores was 2.2, or qualitatively "good". The program coordinator intends to follow-up with the Chief of the Plymouth Fire Department for a more detailed discussion of the outcomes rated as poor.

8. Indicate the number of degrees awarded in this program for the last five years.

Include Graduate chart

**Fire Science Degree Program**

<table>
<thead>
<tr>
<th></th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td># Graduates</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>2+</td>
</tr>
</tbody>
</table>

**Fire Science Degree EMS Option Program**

<table>
<thead>
<tr>
<th></th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Fire Officer Development Certificate Program

<table>
<thead>
<tr>
<th>Year</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td># Graduates</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Paramedic Certificate Program

<table>
<thead>
<tr>
<th>Year</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td># Graduates</td>
<td>46</td>
<td>10</td>
<td>39</td>
<td>33</td>
<td>1</td>
<td>23</td>
<td>24</td>
<td>0</td>
</tr>
</tbody>
</table>
IV: Program Design

1. Based on the Market Analysis/Influence in Section III, evaluate the current curriculum's strengths and identify those areas that require attention and changes or additions that could lead to increased growth in the program.

Strengths
- New courses FSC120 Introduction to Incident Management, FSC130 Shipboard fire Fighting, FSC115 Introduction to Technical Rescue
- Revised course learning outcomes and prerequisites reflect local and regional needs
- Revised FSC109 Fire Dept Management and Planning and FSC114 Fire Company Management based upon need for greater emphasis on EMS core
- Identified new certificate program for Fire Protection Technician based on recent catastrophic building fires and changes in fire building codes

Requires Attention
- Methods to assess student learning outcomes
- College will develop its own OEMS accredited EMT/Paramedic programs
- Create stand-alone Associate of Science degree program in EMS
- More detailed graduate follow-up -determine impact of degree on career progression
- Determine the impact of younger students with no prior fire fighting experience on the presentation of course content, student learning activities, and assessment of student learning outcomes
- Develop long range schedule for degree completion to include some day and summer session courses along with the traditional evening schedule

2. Curriculum: Provide information from the College catalog, which identifies all of the courses in the program(s) of study. (Attach copies as printed in the most recent College catalog.)
# Fire Science Program - Fire Science Option

Students who wish to major in Fire Science must select either the Fire Science Option or Emergency Medical Services Option. Professional education courses are offered evenings only. To graduate in the Fire Science program - Fire Science option, a student must complete the following required course of study.

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester Offered</th>
<th>Semester Taken</th>
<th>Grade Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM103</td>
<td>Oral Communication</td>
<td>3</td>
<td>ENL010 or a satisfactory reading comprehension score on the basic skills assessment</td>
<td>every</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENL101</td>
<td>English Composition I</td>
<td>3</td>
<td>Appropriate score on the Computerized Placement Test or grade of C or better in ENL050 or ESL201</td>
<td>every</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENL102</td>
<td>English Composition II</td>
<td>3</td>
<td>ENL101</td>
<td>every</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHM106 or CHM109</td>
<td>Survey of Chemistry (or) Chemistry for the Health Sciences I</td>
<td>4</td>
<td>MAT020 or satisfactory basic skills assessment scores (or) MAT030 or satisfactory basic skills assessment scores</td>
<td>F &amp; S every</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fine and Performing Arts (or) Language Arts</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Psychology (or) Sociology</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mathematics (or) Natural Science</td>
<td>3/4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC100</td>
<td>Introduction to Fire Protection</td>
<td>3</td>
<td>ENL020 and ENL050 or satisfactory basic skills assessment score</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC101</td>
<td>Fundamentals of Fire Prevention</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC102</td>
<td>Fire Protection Systems and Equipment</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC103</td>
<td>Fire Fighting Tactics and Strategy</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC104</td>
<td>Building Construction for the Fire Service</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC105</td>
<td>Hazardous Materials</td>
<td>3</td>
<td>CHM106 or CHM101 or CHM109</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC107</td>
<td>Hydraulics for Fire Science</td>
<td>3</td>
<td>MAT030 or satisfactory basic skills assessment score</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC108</td>
<td>Fire Investigation and Evidence</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC109</td>
<td>Fire Department Management and Planning</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC110</td>
<td>Fire Codes and Ordinances</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC114</td>
<td>Fire Company Management</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elective**</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fire Science elective*</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Academic Program Review

28
Overview: This program offers the technical and educational requirements to assist in the development of knowledge required to succeed in the fire protection field. This program is centered around municipal fire protection. Aspects of fire protection in the private sector are also presented.

Career Outlook: Students who plan a career in firefighting or fire safety technology should select this program which is based on the premise that in-service personnel need to study technical improvement and that new recruits must be better qualified to enter fire and safety careers. The coursework in the Fire Science program may be helpful in succeeding in the entrance and promotional exams for the fire service. A sound foundation is provided for continuing into a four-year fire degree program.

* Fire Science Electives:
  EMS101 Emergency Medical Technician: EMT
  EMS201 Advanced Pre-Hospital Training Program: Paramedic I
  EMS202 Advanced Pre-Hospital Training Program: Paramedic II
  (or) courses that have been approved in advance by both the Fire Science Coordinator and the Associate Dean.

**GIT110 Microcomputer Software Applications is recommended.
Fire Science Program - Emergency Medical Services Option

Students who wish to major in Fire Science must select either the Fire Science Option or Emergency Medical Services Option. Professional education courses are offered evenings only. To graduate in the Fire Science program - Emergency Medical Services option, a student must complete the following required course of study.

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester Offered</th>
<th>Semester Taken</th>
<th>Grade Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENL101</td>
<td>English Composition I</td>
<td>3</td>
<td>Appropriate score on the Computerized Placement Test or grade of C or better in ENL050 or ESL201</td>
<td>Every</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENL102</td>
<td>English Composition II</td>
<td>3</td>
<td>ENL101</td>
<td>Every</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM103</td>
<td>Oral Communication</td>
<td>3</td>
<td>ENL010 or a satisfactory reading comprehension score on the basic skills assessment</td>
<td>Every</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSY101</td>
<td>Psychology (or) Sociology</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHM106</td>
<td>Survey of Chemistry (or) Chemistry for the Health Sciences I</td>
<td>4</td>
<td>MAT020 or satisfactory basic skills assessment score (or) MAT030 or satisfactory basic skills assessment score</td>
<td>F &amp; S every</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHM109</td>
<td>Fine and Performing Arts (or) Language Arts</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIO105</td>
<td>Survey of Anatomy and Physiology</td>
<td>4</td>
<td>MAT020, ENL020 &amp; ENL050 or satisfactory basic skills assessment scores</td>
<td>Every</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Professional Education

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester Offered</th>
<th>Semester Taken</th>
<th>Grade Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMS101</td>
<td>Emergency Medical Technician: EMT</td>
<td>5</td>
<td></td>
<td>Fall &amp; Spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMS201</td>
<td>Advanced Pre-Hospital Training Program: Paramedic I</td>
<td>7</td>
<td></td>
<td>Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMS202</td>
<td>Advanced Pre-Hospital Training Program: Paramedic II</td>
<td>8</td>
<td>EMS201</td>
<td>Spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC100</td>
<td>Introduction to Fire Protection</td>
<td>3</td>
<td>ENL020 and ENL050 or satisfactory basic skills assessment score</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC101</td>
<td>Fundamentals of Fire Prevention</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC103</td>
<td>Fire Fighting Tactics and Strategy</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC105</td>
<td>Hazardous Materials</td>
<td>3</td>
<td>CHM106 or CHM101 or CHM109</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC107</td>
<td>Hydraulics for Fire Science</td>
<td>3</td>
<td>MAT030 or or satisfactory basic skills assessment score</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC109</td>
<td>Fire Department Management and Planning</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>*</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Overview: This program is designed to expand the educational development of the Emergency Medical Services. Material covered in this program will expand the skill and education of persons working in the field or in administrative areas of Emergency Medical Services.

Career Outlook: This program is designed to provide professional training for students interested in careers in the Emergency Medical Services field with opportunities in municipal, state, and federal agencies, industry, insurance companies, hospitals and various medical offices.

*GIT110 Microcomputer Software Applications is recommended.

---

**Cape Cod Community College**

**2005 Catalog**

**Paramedic Certificate**

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester Offered</th>
<th>Semester Taken</th>
<th>Grade Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMS201</td>
<td>Advanced Pre-Hospital Training Program: Paramedic I</td>
<td>7</td>
<td></td>
<td>Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMS202</td>
<td>Advanced Pre-Hospital Training Program: Paramedic II</td>
<td>8</td>
<td>EMS201</td>
<td>Spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits:</strong></td>
<td></td>
<td><strong>15</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Overview: This program is designed to assist the student to prepare for the State Certificate Exam for Paramedic. Students will be given the basic skills and technical information to provide emergency medical services at the paramedic level.

Career Outlook: This program is designed to provide professional training for students interested in careers in the paramedic field with opportunities in municipal, state and federal agencies, industry, insurance companies, hospitals and various medical offices.
Cape Cod Community College 2005 Catalog

Fire Officer Development Certificate

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester Offered</th>
<th>Semester Taken</th>
<th>Grade Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENL101</td>
<td>English Composition I</td>
<td>3</td>
<td>Appropriate score on the Computerized Placement Test or grade of C or better in ENL050 or ESL201</td>
<td>every</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC101</td>
<td>Fundamentals of Fire Prevention</td>
<td>3</td>
<td>FSC100</td>
<td>Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC102</td>
<td>Fire Protection Systems and Equipment</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC103</td>
<td>Fire Fighting Tactics and Strategy</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC104</td>
<td>Building Construction for the Fire Service</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC110</td>
<td>Fire Codes and Ordinances</td>
<td>3</td>
<td>None; FSC100 &amp; FSC101 recommended</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC114</td>
<td>Fire Company Management</td>
<td>3</td>
<td>FSC100</td>
<td>evenings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Credits:</td>
<td></td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Overview: This program offers the basic skills required for an individual to successfully manage and lead firefighters in daily and emergency operations at a fire company level. This program will provide exposure to materials used in promotional examinations.

Career Outlook: This program offers instruction for firefighters who wish to upgrade their career status and for students who wish to transfer to an upper-level college or university.

3. Identify and discuss program courses for which outcomes are available.

In preparation for the development of student learning outcomes for all courses, the review team examined the model curriculum developed by National Fire Science Curriculum Committee (NFSCC). The NFSCC was formed in 2002 with the support and endorsement of the National Fire Academy to develop standard titles, descriptions, and outcomes for courses in what was identified as the six fire science core courses for the associate degree and additional "non-core" courses or fire science electives. This is part of an effort within the National Fire Academy to move toward a national system for fire related education at the associate and baccalaureate levels.
The model is said to offer a career path for the fire professional which suggests collaboration between fire-related training, higher education, and certification providers. This model complements the mission statements of both the Fire Science and Emergency Medical Services Options and the Fire Development Certificate Programs. Many members of the advisory committee and the program review team would like to see a time when courses taken at the associate degree level would be recognized by the state fire academy as the didactic portion of the Fire Fighter I and II curriculum required by the state and regional fire academies. Members of the advisory committee see this as an important and ongoing objective.

The syllabus of every course in the program has been reviewed and revised to reflect statements of student learning outcomes reflecting changes in the field of fire protection in the post 9/11 era particularly in the area of incident management. A new elective course, Introduction to Incident Management has been developed and approved in response to the National Incident Management System (NIMS). NIMS refers to a core set of concepts, principles, and terminology for incident command and multi-agency cooperation and a National Response Plan (NRP) to encompass all public safety disciplines and hazards.

The College offers its EMT/Paramedic courses under a contract with Cape Cod and Islands Emergency Medical Services System, Inc. (CIEMSS) who subcontracts with Emergency Medical Teaching Services, Inc under the direction of Glenn Coffin, Director. The emergency medical services courses which include Emergency Medical Technician, Advanced Pre-Hospital Program Paramedic I and II were recently reviewed and revised in collaboration with the instructors to assure compliance with Massachusetts Office of Emergency Medical Services accreditation requirements and standards. It is important to note that the program accreditation is held by the subcontractor (Emergency Medical Teaching Services) and not the College or CIEMSS.
4. Attach copies of the College syllabus for each program course.

Attachments Tab 1

5. How are course outcomes developed, reviewed and modified?
All courses are reviewed for currency by the individual faculty assigned to teach the course(s). Suggestions for revisions are taken to the Advisory Committee for review and comment. Final changes to courses are approved by the Advisory Committee and implemented following review and approval by the Social Science and Human Services Department. Revisions to any element in the 10-point department-approved syllabus then goes to the Curriculum and Programs Committee, a subcommittee of College Meeting and finally to the President for final approval and implementation.

6. Describe how course outcomes are assessed.
Course outcomes are assessed through student performance on individual course assessment tools, state and national certification exams and clinical practicum evaluations by experts in community-based medical settings and, and employer surveys.

As stated in #5, all programs and individual courses are subject to rigorous peer review by adjunct faculty and members of the Advisory Committee who represent executive leadership of several local fire departments and the emergency medical services agency which serves the Cape and Islands. Additionally, Advisory Committee members participate in state-level fire service and fire service training organizations, and represent independent and not-for-profit fire protection consultation, education and training, and systems organizations.

7. Describe the process used to review curriculum and course content. What is the role of faculty? What is the role of the Program Advisory Committee?

In December 2003, the academic divisional structure of the college was reorganized. The reorganization moved the Fire Science Program from the Division of Arts and Sciences and the Department of Natural Sciences to the Division of Business, Health Sciences, and Social Sciences/Human Services and to the Department of Social Sciences/Human Services.

The Associate Dean and Program Coordinator acknowledge the essential role of the Advisory Committee in curriculum review and development. Therefore, the Committee has met at least two times per year since March 2004. Significant work on program review, course revision and development and the approval of a new program to prepare Fire Protection Technicians in a thirty credit certificate program.

As mentioned earlier, three of our instructors sit on the Advisory Committee and place course review, recommendations for change, and discussion of new courses and programs as regular agenda items. The Program Coordinator meets regularly with the Associate Dean to develop the semester schedule, review curricula, and plan the Advisory Committee agenda and follow-up on action items.
Faculty members are encouraged to recommend changes in courses and programs based upon changes in the public safety sector reflecting federal, state, and local regulations and best practices which govern fire protection and emergency medical services in the College’s service area. Program instructors look to their colleagues from other disciplines to assist with the pedagogical elements of curriculum development including identification and assessment of student learning outcomes, prerequisites, and teaching methods.

As part of the program review process, the review team met with a representative of the Emergency Medical Teaching Services, Inc and conducted an analysis of the program’s strengths, weakness.

8. Describe the process used for annual review of textbooks.

Instructors receive solicited and unsolicited copies of textbooks from publishers. These are reviewed according to course learning outcomes, level of the course, and content coverage and organization. Instructors are then asked to make their selections and complete book orders in October for spring courses and April for fall courses. Faculty consult and share information and opinions about texts but it is the responsibility of each instructor to select the textbook(s) and other supplementary materials to be used in courses.

9. Describe how courses are scheduled to meet the needs of day and evening students?

Historically, the Fire Sciences program has operated through the evening division of the College because the student population consisted of adult students working other jobs during the day. There are no state-supported faculty positions assigned to this program so the part-time coordinator and instructors are available to teach courses in the evenings and weekends in the case of the emergency medical service courses.

However, the College is seeing an increase in the number of younger students interested in the Fire Science program so the schedule is now rotating day and evening sections of FSC100 Introduction to Fire Protection from the fall to spring semesters with satisfactory enrollment. The faculty plan to expand this option with additional course for the fall 2006-2007 subject to recruitment of qualified faculty. Additional expansion to summer session and online options are being explored to expand access for students.

10. Describe the process for assuring that students who are enrolled in courses offered through evening or at a distance are acquiring the same skill set as those students who are enrolled in the day program.

The Fire Science Program is privileged to have a senior, experienced, and effective faculty who teach the same courses from cycle to cycle and do so both during the day and in evening courses. Given that only three of the courses are currently taught in both day and evening with the same faculty the College can assure consistency in content, delivery, and student outcomes.
11. Provide a proposed revised curriculum for the program and describe the rationale for the course sequence.

The proposed revision to the Fire Science Program was approved by the Advisory Committee on April 8, 2005 and will be reflected in the 2006-2007 College Catalog.

### Cape Cod Community College 2006 Catalog

**Fire Science Program - Fire Science Option Proposed 4/8/05**

Students who wish to major in Fire Science must select either the Fire Science Option or Emergency Medical Services Option. Professional education courses are offered evenings only. To graduate in the Fire Science program - Fire Science option, a student must complete the following required course of study.

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSC100</td>
<td>Introduction to Fire Protection</td>
<td>3</td>
<td>ENL020 and ENL030 or satisfactory basic skills assessment score</td>
<td>new</td>
</tr>
<tr>
<td>FSC101</td>
<td>Fundamentals of Fire Prevention</td>
<td>3</td>
<td>FSC100</td>
<td>new</td>
</tr>
<tr>
<td>FSC102</td>
<td>Fire Protection Systems and Equipment</td>
<td>3</td>
<td>FSC100</td>
<td>new</td>
</tr>
<tr>
<td>FSC103</td>
<td>Fire Fighting Tactics and Strategy</td>
<td>3</td>
<td>FSC100</td>
<td></td>
</tr>
<tr>
<td>FSC104</td>
<td>Building Construction for the Fire Service</td>
<td>3</td>
<td>FSC100</td>
<td></td>
</tr>
<tr>
<td>FSC105</td>
<td>Hazardous Materials</td>
<td>3</td>
<td>CHM106 or CHM101 or CHM109</td>
<td></td>
</tr>
<tr>
<td>FSC107</td>
<td>Hydraulics for Fire Science</td>
<td>3</td>
<td>MAT030 or satisfactory basic skills assessment score</td>
<td></td>
</tr>
<tr>
<td>FSC108</td>
<td>Fire Investigation and Evidence</td>
<td>3</td>
<td>FSC100</td>
<td></td>
</tr>
<tr>
<td>FSC109</td>
<td>Fire Department Management and Planning</td>
<td>3</td>
<td>FSC100</td>
<td></td>
</tr>
<tr>
<td>FSC110</td>
<td>Fire Codes and Ordinances</td>
<td>3</td>
<td>FSC100</td>
<td></td>
</tr>
<tr>
<td>FSC114</td>
<td>Fire Company Management</td>
<td>3</td>
<td>FSC100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fire Science elective*</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**General Education**

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENL101</td>
<td>English Composition I</td>
<td>3</td>
<td>Appropriate score on the Computerized Placement Test or grade of C or better in ENL050 or ESL201</td>
</tr>
<tr>
<td>ENL102</td>
<td>English Composition II</td>
<td>3</td>
<td>ENL101</td>
</tr>
<tr>
<td>COM103</td>
<td>Oral Communication</td>
<td>3</td>
<td>ENL010 or a satisfactory reading comprehension score on the basic skills assessment</td>
</tr>
</tbody>
</table>

Academic Program Review
<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology (or) Sociology</td>
<td>3</td>
</tr>
<tr>
<td>CHM109 (or)</td>
<td></td>
</tr>
<tr>
<td>Survey of Chemistry (or)</td>
<td>4</td>
</tr>
<tr>
<td>Fine and Performing Arts (or)</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics (or) Natural Science</td>
<td>3/4</td>
</tr>
<tr>
<td>Elective* GIT110 Microcomputer</td>
<td>3</td>
</tr>
<tr>
<td>Applications Software is</td>
<td></td>
</tr>
<tr>
<td>recommended</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>61/62</td>
</tr>
</tbody>
</table>

**Overview:** This program offers the technical and educational requirements to assist in the development of knowledge required to succeed in the fire protection field. This program is directed to municipal fire protection. Aspects of fire protection in the private sector are also presented.

**Career Outlook:** Students who plan a career in firefighting or fire safety technology should select this program which is based on the premise that in-service personnel need to study technical improvement and that new recruits must be better qualified to enter fire and safety careers. The coursework in the Fire Science program may be helpful in succeeding in the entrance and promotional exams for the fire service. A sound foundation is provided for continuing into a four-year fire degree program.

- **Fire Science Electives:**
  - FSC120 Introduction to Incident Management (NEW)
  - FSC200 Special Topics in Fire Science 1 credit (may be repeated for a total of 3 credits (NEW)
  - EMS101 Emergency Medical Technician: EMT
  - EMS201 Advanced Pre-Hospital Training Program: Paramedic I
  - EMS202 Advanced Pre-Hospital Training Program: Paramedic II
  - (or) courses that have been approved in advance by both the Fire Science Coordinator and the Associate Dean of Business, Health Sciences and Social Sciences/Human Services.

---

**Cape Cod Community College**

2006 Catalog

Fire Science Program - Emergency Medical Services Option Proposed

4/8/05

Students who wish to major in Fire Science must select either the Fire Science Option or Emergency Medical Services Option. Professional education courses are offered evenings only. To graduate in the Fire Science program - Emergency Medical Services option, a student must complete the following required course of study.

Academic Program Review
<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Professional Education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSC100</td>
<td>Introduction to Fire Protection</td>
<td>3</td>
<td>ENL020 and ENL050 or satisfactory basic skills assessment score</td>
<td>New</td>
</tr>
<tr>
<td>FSC101</td>
<td>Fundamentals of Fire Prevention</td>
<td>3</td>
<td>FSC100</td>
<td>New</td>
</tr>
<tr>
<td>FSC103</td>
<td>Fire Fighting Tactics and Strategy</td>
<td>3</td>
<td>FSC100</td>
<td></td>
</tr>
<tr>
<td>FSC105</td>
<td>Hazardous Materials</td>
<td>3</td>
<td>CHM106 or CHM101 or CHM109</td>
<td></td>
</tr>
<tr>
<td>FSC107</td>
<td>Hydraulics for Fire Science</td>
<td>3</td>
<td>MAT030 or satisfactory basic skills assessment score</td>
<td></td>
</tr>
<tr>
<td>FSC109</td>
<td>Fire Department Management and Planning</td>
<td>3</td>
<td>FSC100</td>
<td></td>
</tr>
<tr>
<td>EMS101</td>
<td>Emergency Medical Technician: EMT</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMS201</td>
<td>Advanced Pre-Hospital Training Program: Paramedic I</td>
<td>7</td>
<td>1 year of State or National certification as EMT/Basic or EMT/MAST. Successful completion of a pre-testing and interview process administered by Cape &amp; Islands EMS</td>
<td></td>
</tr>
<tr>
<td>EMS202</td>
<td>Advanced Pre-Hospital Training Program: Paramedic II</td>
<td>8</td>
<td>1 year of State or National certification as EMT/Basic or EMT/MAST. Successful completion of a pre-testing and interview process administered by Cape &amp; Islands EMS &amp; EMS201</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>General Education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENL101</td>
<td>English Composition I</td>
<td>3</td>
<td>Appropriate score on the Computerized Placement Test or grade of C or better in ENL050 or ESL201</td>
<td></td>
</tr>
<tr>
<td>ENL102</td>
<td>English Composition II</td>
<td>3</td>
<td>ENL101</td>
<td></td>
</tr>
<tr>
<td>COM103</td>
<td>Oral Communication</td>
<td>3</td>
<td>ENL010 or a satisfactory reading comprehension score on the basic skills assessment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Psychology (or) Sociology</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHM106</td>
<td>Survey of Chemistry (or) Chemistry for the Health Sciences I</td>
<td>4</td>
<td>MAT020 or satisfactory basic skills assessment score (or) MAT030 or satisfactory basic skills assessment score</td>
<td></td>
</tr>
<tr>
<td>CHM109</td>
<td>(or) Chemistry for the Health Sciences I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fine and Performing Arts (or) Language Arts</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIO105</td>
<td>Survey of Anatomy and Physiology</td>
<td>4</td>
<td>MAT020, ENL020 &amp; ENL050 or satisfactory basic skills assessment scores</td>
<td>New</td>
</tr>
<tr>
<td></td>
<td>Education elective * (GIT110 Microcomputer Applications Software is recommended)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Credits:</strong></td>
<td><strong>64</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Overview:** This program is designed to expand the educational development of the Emergency Medical Services. Material covered in this program will expand the skill and education of persons working in the field or in administrative areas of Emergency Medical Services.
Career Outlook: This program is designed to provide professional training for students interested in careers in the Emergency Medical Services field with opportunities in municipal, state, and federal agencies, industry, insurance companies, hospitals and various medical offices.

Rationale for changes to the program:

- Change in course prerequisites for FSC100 Introduction to Fire Protection – Faculty identified the need for students to demonstrate higher entry level reading, writing, and critical thinking skills early in the program of study. This resulted in the addition of ENL020 College Reading and Study Skills and ENL050 Foundations in Writing or Satisfactory Basis Skills Scores as prerequisites for this course. With these prerequisites completed prior to registering for the professional courses it is anticipated that student will also complete ENL101 English Composition I earlier in the program of study and therefore demonstrate improved competencies in critical thinking, and the ability to develop and express ideas clearly and effectively using Standard American English.

- Change in course prerequisite for FSC101 Fundamentals of Fire Prevention – This change will also address the reading, writing, and critical thinking concerns related to the first three professional courses. Faculty also note a change in the pool of matriculated students from a group of employed fire protection officers with direct knowledge and prior fire academy training in the introductory course content and a younger pool of students without any prior knowledge of the fire service. Therefore the prerequisite for FSC101 has been identified as FSC100 Introduction to Fire Protection.

- Change in course prerequisite for FSC102 Fire Protection Systems and Equipment to FSC100 Introduction to Fire Protection for the reasons stated above.

- Change overall program requirements for both the Fire Science and Emergency Medical Services options by deleting the identified “General Education Elective” and changing that to a free elective with a recommendation that students select GIT110 Microcomputer Applications Software or another Fire Science course for this elective. Close review of the general education program required courses identified that this final general education requirement exceeded the 21 or 22 credit general education distribution required for the Associate in Science degree.

- Retire FSC112 Handling Transportation Emergencies and replace it with FSC120 Introduction to Incident Management. The new elective reflects national, state, and local standards and requirements for interagency coordination of major incidents and is based upon the standards and best practices identified in the National Incident Management System (NIMS).

The course sequence is based upon introductory to complex concepts but provides students with a great deal of flexibility to complete the program in a sequence according to individual interests and schedule due to limited prerequisites for professional courses to FSC100, FSC101, DEV030 Elementary Algebra for FSC107 Hydraulics for Fire Science and a lab chemistry course for FSC105 Hazardous Materials.
12. Explain how general education components are integrated within the program.

General education requirements for the Fire Science Program conform to the requirements established by the Board of Higher Education and the General Education Standing committee of the College Meeting for the award of the Associate in Science Degree and consist of the minimum 21-22 credit sequence as follows:

- ENL101 English Composition I 3
- ENL102 English Composition II or 3
- COM103 Oral Communication
- Natural Science (or) Mathematics 3/4
- Social Science (or) Behavioral Science 3
- Fine and Performing Arts (or)
- Language Arts 3
- General Education Courses 6

Total General Education Credits 21/22

Oral and written expression is considered a program outcome for both the Fire Science and Emergency Medical Services degree options, therefore two full semesters of English composition courses and an oral communication course are considered essential general education courses for the program. Additionally, the emphasis on critical thinking and written expression is so important that course prerequisites for the introductory fire protection course have recently been changed from none to the developmental courses or satisfactory basic skills assessment scores that are required for ENL101 English Composition I. Faculty project that this change will facilitate student completion of the English composition course earlier in their program of study which will have a positive impact on the critical thinking and writing competencies demonstrated by student from an earlier point in their studies.

The faculty integrates a required science course(s) into the program appropriate to the science foundation required for application to the program option selected. The Fire Science Option requires a chemistry course and an additional natural science or mathematics course. This provides the scientific foundation for courses and applied content in hydraulics, hazardous materials, fire investigation, and fire protection equipment, tactics and strategy. The faculty and Advisory Committee have raised a concern about the need for an additional mathematics requirement given the applied calculations that are required in many aspects of the fire protection officer's role. At present developmental math competencies in the form of MAT020 Prealgebra and MAT030 Elementary Algebra or satisfactory basic skills assessment scores for both Hydraulics and Chemistry are the only required mathematics competencies.

The Emergency Medical Services Option requires both a chemistry course and a survey of anatomy and physiology course to provide the appropriate foundation for courses and content in paramedic science and pharmacology.

Students have the option to select either a psychology or sociology course with many students selecting both Introduction to Psychology and Principles of Sociology due to the need to apply knowledge of human behavior, mental disorders, cultural beliefs and practices, and sensitivity an appreciation for diversity in the performance of their duties.
Students have the option of selecting either a language arts or a performing arts course to provide them with more enrichment in the humanities. Faculty and the program review team discussed the importance of fire protection and emergency medical service providers demonstrating the ability to communicate on a survival level in the target language of major communities of non-native speakers in the service area. Currently, one semester of a conversational world language course does not meet general education requirements for the Associate in Science Degree but it is on the agenda for the College’s General Education Committee.

Finally, in response to the need for a degree of competence in information technology for the performance of fire protection and emergency medical services roles at entry and supervisory levels, students are advised to take GIT110 Microcomputer Applications Software as the final “free” elective. Indeed, the College’s General Education Committee is considering requiring this course or demonstrated competency in informational fluency as part of the graduation requirements for all students.

In terms of new program development, the Advisory Committee has proposed a new certificate program for Fire Protection Technician. According to the Department of Labor Occupational Outlook 2004-2005, most fire departments have a fire prevention division which conducts inspections of structures to prevent fires and ensure fire code compliance. Technicians work with planners and developers to check and approve plans for new buildings. There are occupational opportunities in the fire service, insurance industry, municipal and state agencies. The new program combines existing fire science and construction technology courses with the addition of one new course (Fire Service Plans Review) in addition to one required general education course (ENL101 English Composition I) to complete a 30 credit certificate.

**Proposed Program Outcomes**

- Review building plans, structures, and uses of existing and new buildings
- Analyze building plans and fire protection systems for compliance with state and local building codes and ordinances
- Consult with private industry, developers, and municipal building authorities to recommend strategies to comply with current fire protection standards
- Develop fire safety plans using current fire protection standards
### Proposed Curriculum

**Cape Cod Community College**
**2006 Catalog**

**Fire Science Program - Fire Protection Technician Certificate Program - Proposed for Fall 2006**

Professional education courses are offered evenings only.

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSC100</td>
<td>Introduction to Fire Protection</td>
<td>3</td>
<td>ENL020 and ENL050 or satisfactory basic skills assessment score</td>
<td></td>
</tr>
<tr>
<td>FSC101</td>
<td>Fundamentals of Fire Prevention</td>
<td>3</td>
<td>FSC100</td>
<td></td>
</tr>
<tr>
<td>FSC102</td>
<td>Fire Protection Systems and Equipment</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>FSC104</td>
<td>Building Construction for the Fire Service</td>
<td>3</td>
<td>FSC100</td>
<td></td>
</tr>
<tr>
<td>FSC107</td>
<td>Hydraulics for Fire Science</td>
<td>3</td>
<td>MAT030 or satisfactory basic skills assessment score</td>
<td></td>
</tr>
<tr>
<td>FSC110</td>
<td>Fire Codes and Ordinances</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>CON105</td>
<td>Materials of Construction</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>CON 120</td>
<td>Understanding and working With the Massachusetts State Building Code</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>FSC XXX</td>
<td>Fire Service Plans Review</td>
<td>3</td>
<td>TBA</td>
<td>NEW</td>
</tr>
</tbody>
</table>

**General Education**

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENL101</td>
<td>English Composition I</td>
<td>3</td>
<td>Appropriate score on the Computerized Placement Test or grade of C or better in ENL050) or ESL201</td>
</tr>
</tbody>
</table>

Total Credits: 30
Overview: Completion of this certificate will prepare graduates to assist in fire prevention planning, risk assessment, inspection, and systems planning for fire safety and loss.

13. Describe the instructional methodologies utilized in the program.

Instructors use a variety of teaching modalities depending on the outcomes of the course and range from lecture, integration of technology with PowerPoint® presentations, small group project learning using simulations and cases, oral presentations, practicum, field-based supervised clinical experiences, field trips, and skills assessments particularly in the emergency medical services courses.

14. Provide examples of how students demonstrate their use and understanding of information technology in the program.

Word processing to complete assignments, email, evaluation of validity of internet sources, use of advanced life support medical technology to assess patient status and deliver patient care, research electronic sources of state laws, regulations, and codes.

15. List any changes that would enhance student learning.

- Explore integration of Blackboard learning management system as a supplement to campus-based course
- Explore development of selected fully online courses and telecourses

16. Describe any work-based or service-learning opportunities within the program.

Not available at this time although many students are call firefighters and or EMT/Paramedics, or presently employed in the fire protection field.

17. Provide data that demonstrates the effectiveness of the opportunities described above.

N/A

18. Provide examples of student learning outcomes (knowledge, skills, and abilities) for the program and its courses.

Attachment: Selected Instructor Course Materials Tab 2
19. Describe any new student assessment methods that have been implemented.
   Not at this time.
V: Faculty

1. Discuss the adequacy of staffing levels to teach and advise students in the program. Is the ratio of full-time to adjunct faculty appropriate?
This program has historically been and continues to be an evening program and as such receives no state support. The program is staffed by a part-time coordinator who receives a very nominal stipend ($1,294/semester) and part-time instructors whose only compensation for curriculum work is included in the compensation on a per course basis of $2,254 - $2,726 for a three (3) credit course as stated in the collective bargaining agreement.

In order for either the fire science option or emergency medical options to grow, state appropriation for at least one full-time faculty member who would carry a four course work load in addition to coordination duties is necessary.

2. List any professional development activities participated in by program faculty. Describe any unmet professional needs.
Adjunct faculty participate in annual adjunct faculty orientation sessions, regularly attend the Program Advisory Committee meetings, and meet individually with the Dean with regard to course, development, implementation and assessment of student performance.

3. Provide evidence that faculty who are teaching in this program have the proper credentials and preparation. Include resumes of all faculty (adjuncts and full-time) who are teaching in the program. (Transcripts of all faculty must be on file in the Human Resources office.)

Please refer to the personnel files located in the Human Resources Department

4. Is there a plan for professional development for faculty who lack current credentials? If so, describe any recent examples of how professional development arrangements have been made.

N/A
VI: Recruitment

1. What efforts are made to recruit/market the program? (Include any examples of faculty recruitment.)

The College received Perkins funding to provide career counseling and academic advising to students to promote individuals within underrepresented ethnic, racial, and gender to consider fire protection and other career programs. Students are invited to programs hosted by the Advising Center featuring professionals from under-represented groups. For example, last year the program featured a female fire fighter/paramedic who shared her personal story about pursuing her career in a male dominated profession.

The Barnstable High School and the Hyannis Fire Department collaborate in internship experiences for high school juniors and this has had a modest impact on CCCC enrollments.

2. Are there plans to target this program to any new groups?

There are no specific plans to target new groups, however as indicated in VI. 1, the College has initiated a program to encourage more women to pursue careers where they have been underrepresented. It is too soon to measure the impact of those efforts.

The overall demographic picture of new students is changing with younger students from the 18-29 year old group increasing. This may have an impact on the Fire Science and Emergency Medical Services enrollments as we are seeing fewer incumbent fire fighters enrolled in these programs and more students with no fire fighter experience.

Indeed, local fire chiefs say that the paramedic certificate has become an informal prerequisite for fighter positions.

3. List all articulation agreements currently in place for this program (e.g. Tech Prep).

Not applicable at this time.

4. Does your program have a program information packet available for students? Please attach copies.

Catalog, Semester Bulletin
Cape and Islands Emergency System, Inc. provides information about the EMT and Paramedic Programs for which the College sub-contacts.
5. Prepare enrollment projections for the next five years. What are these projections based upon?

New student matriculates in the AS in Fire Science Program in the period from Fall 2000 to Fall 2005 has ranged from a low of one student in Spring 2000 to a high of 17 new students in both Fall 2003 and Fall 2005 and a projection of at least 7 new students in Spring 2005, or an average of 17 new students over the previous six-year period. New student projections are 25 new students in each of the next five years (2005 – 2010).
VII: Program Resources/Needs

1. What specific support services and activities does this program require? Comment on the availability and adequacy of these services.

Designated storage and appropriate campus laboratory space and up-to-date simulation technology and other supplies and equipment for EMS courses as the College goes forward to establish and expand the paramedic programs.


Lab and equipment for Fire Protection Systems and Equipment.

2. Assess the overall currency of the library collection. Make recommendations for weeding out out-of-date materials and ordering new acquisitions.

See list of current of electronic and print materials. (Attachment)

Faculty need to weed out-of-date materials and recommend replacement materials.

Request purchase subscription of National Fire Protection Association (NFPA) Codes Online

Purchase relevant media to supplement course materials

Attachment: Fire Science Library Holdings Tab 3

3. Do program facilities and equipment meet current business and industry standards?

Many classrooms are equipped with "smart" technology including digital projection and internet access. Many instructors use videos, Powerpoint presentations, and other technology in their classes. The Lyndon Lorusso Applied Technology Building will be available for computer classes in the summer semester but in the meantime there are 5 computer classrooms with projection capability.

Currently, there is inadequate space for equipment storage and teaching the practical applications of the EMT and Paramedic courses. Students use the lobbies and hallways of the science building for these all-day classes. There are plans underway to demonstrate the need to the state building authority for a new allied health and science building.

Program growth in the area of emergency medical services will require the College to enter into partnerships with the Barnstable County Fire Academy, the military base, or other groups to assure adequate classroom and lab space and safe storage of expensive supplies and equipment.

There is also a need for office space for Fire Science Program adjunct faculty, supplies, and equipment.
4. How adequate and appropriate are program facilities and equipment? Be specific about current deficiencies or projected needs.
See VII 3. Current EMS supplies and equipment are adequate as they are provided by Emergency Medical Teaching Services, Inc. in Dennis, Massachusetts.

5. Is the program budget adequate to meet the needs? If not, indicate the deficiencies.

Budget covers faculty salaries, coordinator stipend, and needed equipment and supplies. Program growth in the fire science and emergency medical services options will require moving this program from a part-time evening delivery model to a state supplemented program with full-time faculty/coordinators.

If the college moves ahead to establish its own paramedic certificate and degree programs, additional state support for faculty, accreditation, supplies, and equipment will be necessary in addition to supplementary salary for adjunct faculty and clerical support.

Additional academic equipment funds will be used to purchase software, electronic research data bases.
VIII: Summary

Major Program Strengths:
- Dedicated and highly qualified faculty
- Active and hands-on advisory committee
- Supportive administration
- Satisfactory relationships with fire departments, public safety, emergency services, Barnstable County Fire Academy, and state fire protection agencies
- EMT/Paramedic Program certified by the Office of Emergency Medical Services of the Commonwealth of Massachusetts
- Program is respected by the Fire Protection community

Major Program Issues:
- Part-time program coordination
- EMT and Paramedic programs are outsourced through a contractual agreement with Cape and Islands Emergency Medical Service systems Inc.
- Broaden employability of graduates of degree and certificate programs
- Curriculum implications of Homeland Security and NIMS standards and practices
- Potential curriculum implications of the redefined role of Otis Air Force Base

Recommendations:
- Need to expand fire science degree program options and certificate programs in view of Homeland Security issues, regulations, and protocols
- Need to develop an Associate in Science Degree Paramedic Science Program that will articulate with the Associate in Science Degree Nursing Program (RN)
- Hire at least one full-time program coordinator/faculty member
Plan for program improvement:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Person Responsible</th>
<th>Resources Needed</th>
<th>Cost</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Review FSC130 Shipboard Fire Fighting</td>
<td>Robert Tucker</td>
<td>Faculty expertise in Shipboard Fire Fighting</td>
<td>0</td>
<td>Fall 2006</td>
</tr>
<tr>
<td>3. Pursue developing college-based EMT and Paramedic Certificate Program that meets OEMS Accreditation requirements</td>
<td>Susan Miller, Rosemary Dillon</td>
<td>Budget for program development, completion of the accreditation process and coordination of the program</td>
<td>18-20 hours per week at $35/hour for 30 weeks ($10,500) Equipment $50,000</td>
<td>Begin work in Sept.2006 and admit students for Sept.2007</td>
</tr>
<tr>
<td>4. Concurrent to # 3, explore feasibility of developing an AS Degree program in Paramedic Science</td>
<td>Susan Miller, Rosemary Dillon, Paramedic Coordinator (TBA)</td>
<td>Budget: Full time state-supported position for Coordinator of Paramedic Science Programs</td>
<td>$45,000</td>
<td>FY 2008 Begin work in July 2007 and admit students for September 2008</td>
</tr>
<tr>
<td>5. Software</td>
<td>Faculty Susan Miller</td>
<td>Academic Equipment funds</td>
<td>$3,000</td>
<td>FY07 Budget</td>
</tr>
<tr>
<td>6. Electronic Data Bases</td>
<td>Faculty Susan Miller, Greg Masterson</td>
<td>Learning Resource Funds</td>
<td>TBA</td>
<td>FY07 Budget</td>
</tr>
<tr>
<td>7. Media</td>
<td>Faculty Susan Miller</td>
<td>Learning Resource and Academic Equipment Funds</td>
<td>$2,000</td>
<td>FY07 Budget</td>
</tr>
<tr>
<td>Activity</td>
<td>Person Responsible</td>
<td>Resources Needed</td>
<td>Cost</td>
<td>Timeline</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------------</td>
<td>-----------------------</td>
<td>------</td>
<td>----------------</td>
</tr>
<tr>
<td>8. Office Space for Program Faculty</td>
<td>Susan Miller</td>
<td>One vacant office</td>
<td>0</td>
<td>Fall 2006-2007</td>
</tr>
</tbody>
</table>
Cape Cod Community College

Course Syllabus

Prepared by the Department Social Sciences and Human Services
Department Chair's Signature: ____________________________
Date of Departmental Approval: __________________________
Division Dean's Signature: ____________________________
Date approved by Curriculum and Programs: Effective: 4/28/05

It is understood that the following course material may be reproduced at any time for professional use and information.

1. Title:
   FSC-100 Introduction to Fire Protection

2. Description:
   This course introduces the philosophy and history of fire protection, history of loss of life and property by fire, review of municipal fire defenses, study of the organization and function of federal, state and private fire protection career opportunities. It will introduce various aspects of the fire protection profession.

3. Student Learning Outcomes (instructional objectives: intellectual skills):
   - Discuss the impact of fire on loss of property and life
   - Discuss the history of fire protection
   - Identify the organization and function of federal, state, and private fire protection careers
   - Review organization and function of municipal fire defenses

4. Credit(s):
   Three (3) Credits

5. Required or Elective:
   Required for the Fire Science, A.S. Degree Program. Otherwise, an elective.

6. Satisfies General Education Core or Distribution Requirement:
   Does not satisfy a Core or Distribution Requirement

7. Prerequisite(s):
   ENL020 College Reading and Study Skills and ENL050 Foundations in Writing, or Satisfactory Basic Skills Assessment Score

8. Level of Course:
   Introductory

9. General Statement of Evaluation:
   Examinations, written assignment(s), and oral presentation.

10. Content Outline of Course (sufficiently detailed for the reader to ascertain the content and topics for the course).
1. Careers in Fire Science
   a. Fire Service
   b. Promotion
   c. Education
2. Historical and Scientific Background
   a. Early Fire Protection
   b. Modern Organization
   c. Characteristics of Fire
   d. Causes of Fire
3. Fire Protection Services
   a. Public Organizations
   b. Federal, State and County Services
   c. Private Fire Protection Agencies
4. Fire Department Organization
   a. Department Organization
   b. Records
5. Fire Department Equipment
   a. Pumps and Ladders
   b. Elevating Equipment
   c. Heavy Stream Devices
   d. Other Vehicles
   e. Fire Extinguishers
   f. Protective Equipment
6. Extinguishing Agents
   a. Water and Foam
   b. Chemicals, Powders and Hydrocarbons
7. Tactics and Strategy
   a. Preplanning and Size Up
   b. Rescues
   c. Exposures and Confinement
   d. Ventilation, Overhaul and Salvage
   e. Extinguishment
8. Private Fire Protection
   a. Organizations
   b. First Aid Protection
   c. Outside Protection
9. Sprinkler and Detection Systems
   a. Automatic Sprinkler Protection
   b. Signaling Systems
10. Municipal Fire Defenses
    a. Fire Grading System
11. Field Trip
Cape Cod Community College

Course Syllabus

Prepared by the Department Social Sciences and Human Services
Department Chair's Signature: ______________________________
Date of Departmental Approval: ______________________________
Division Dean's Signature: ______________________________
Date approved by Curriculum and Programs: Effective: 4-28-05

It is understood that the following course material may be reproduced at any
time for professional use and information.

1. Title: FSC-101 Fundamentals of Fire Prevention

2. Description:
This course is concerned with the development and function of the
fire prevention organization. Major areas of recognition include: inspections,
surveying and mapping areas, recognition and enforcement of fire codes and
hazards.

3. Student Learning Outcomes (instructional objectives; intellectual skills):
   • Discuss the needs, levels, and types of fire prevention
   • Discuss the types of fire inspections and surveys
   • Identify the purpose and procedures for special inspections
   • Identify major fire protection organizations
   • Describe the types and causes of fire hazards
   • Describe the types of building construction materials and
     implications for fire prevention
   • Identify processes, documentation, and equipment used in fire
     inspections
   • Compare and contrast types, purposes, benefits, and risks of
     fire prevention/protection systems
   • Discuss State Fire Codes and Laws
   • Identify the role of local and state authorities in the
     investigation of fires
   • Observe equipment, personnel, and procedures use in fire
     prevention

4. Credit(s): Three (3)

5. Required or Elective:
   Required for the Fire Science, A.S. Degree Program. Otherwise, an
   elective.

6. Satisfies General Education Core or Distribution Requirement:
   Does Not Satisfy a Core or Distribution Requirement

7. Prerequisite(s):
   FSC100. Introduction to Fire Protection
**8. Level of Course:**
Introductory

**9. General Statement of Evaluation:**
Mid-Term, Final, Quizzes and a Field Report

**10. Content Outline of Course (sufficiently detailed for the reader to ascertain the content and topics for the course).**

**FSC-101 Fundamentals of Fire Prevention**

1. Introduction
   a. Need for Fire Prevention
   b. Levels of Fire Protection
   c. Types of Inspection

2. Inspections and Surveys
   a. Inspections
   b. Survey
   c. Pre-Fire Planning
   d. Outside/Inside Surveys
   e. Mapping of Surveys
   f. Purpose of Building Inspections
   g. Home Inspections

3. Special Inspections/Heating Alliances
   a. Schools
      i. Fire Drills
   b. Nursing Convalesent Homes
   c. Day Care Centers
   d. Parade Floats
   e. Sporting Events
   f. Other Special Places
   g. Chimney Connectors
   h. Gas Heater Vents
   i. Oil Heater Venting
   j. Masonry Chimney
   k. Factory Chimneys
   l. Rubbish Vendors

4. Fire Prevention Organizations
   a. Audorative Sources
   b. Maps and Symbols

5. Fire Hazards and Causes
   a. Basic Fire Terminology
   b. Definition of Fire Hazards
   c. Types of Heat and Energy Sources
   d. Special Hazards
   e. Target Hazards
   f. Fire Hazards of Material
   g. Conflagration Hazards

6. Building Construction
   a. Heavy Timber
   b. Fire Resistance
   c. Non-Combustible
   d. Ordinary
   e. Wood Frame
   f. Interior Finish
   g. Fire Spread
b. Fire Stopping
  i. Fire Doors and Openings
7. Inspection Procedures
   a. Equipment Needed
   b. When to Conduct Inspection
   c. Before You Enter Property
   d. Inspection Routing
   e. Inspection Report
   f. Inspection Sketches
   g. Follow Up Inspection
9. Fire Protection Systems
   a. Alarm Systems
   b. Sprinkler Equipment
   c. Pre-Engineering Systems
   d. Types of Occupancy by Hazards
9. Arson Investigation - Prevention
   a. State Fire Marshalls Office
   b. Arson Laws
   c. Inspection Before - Fire
   d. How to Conduct a Fire Investigation
10. State Fire Codes and Laws
    a. CMR 527
    b. Chapter 148 - 143 MGL
    c. Other Related Codes
11. Field Trip With Inspection
Cape Cod Community College

Course Syllabus

Prepared by the Department: Social Sciences and Human Services
Department Chair's Signature: ____________________________
Date of Departmental Approval: __________________________
Division Dean's Signature: _____________________________
Date approved by Curriculum and Programs: Effective: __________

It is understood that the following course material may be reproduced at any time for professional use and information.

1. Title: FSC-102 Fire Protection Systems and Equipment

2. Description:
   Fire detection and extinguishing systems of both automatic and manual types are studied, including sprinkler and standpipe systems, inert gases, foam and dry chemicals, temperature and smoke responsive devices and alarm and signaling systems. Demonstrations will illustrate and supplement the class work.

3. Student Learning Outcomes (instructional objectives; intellectual skills):
   a) Describe various hazards that require detection and/or suppression systems.
   b) Describe current and past detection and suppression systems.
   c) Describe the limitations of current and past detection and suppression systems.
   d) Describe the environments that the above systems are best suited for.
   e) Understand effectiveness of Fire Protection systems in Loss Prevention
   f) Know basic workings of various Fire protection Systems
   g) Know basic plan review items for Fire Protection Systems

4. Credit(s):
   Three (3)

5. Required or Elective:
   Required for the Fire Science, A.S. Degree Program. Otherwise, an elective.

6. Satisfies General Education Core or Distribution Requirement:
   Does not Satisfy a Core or Distribution Requirement

7. Prerequisite(s):
   None

8. Level of Course:
   Introductory

9. General Statement of Evaluation:
   Course requirements are met by satisfactory achievement in class tests, Mid-Term, Final and by participation in class discussions and Field Trips.

10. Content Outline of Course (sufficiently detailed for the reader to ascertain the content and topics for the course).
1. Introduction
   a. Needs for Systems and Standards
   b. Fire Extinguishing Systems in General

2. Fundamentals of Sprinkler Protection
   a. Types of Automatic Sprinklers
      i. Wet Systems
      ii. Dry Systems
      iii. Pre-Action Systems
      iv. Combined Dry-Pipe and Pre-Action Systems
      v. Deluge Systems

3. Water Spray Protection

4. Standpipes and Hose Systems

5. Foam Extinguishing Systems

6. Carbon Dioxide Systems

7. Dry Chemical Systems

8. Explosion Suppression Systems

9. Halogenated Extinguishing Systems

10. Field Trip
Cape Cod Community College

Course Syllabus

Prepared by the Department: Social Sciences and Human Services

Department Chair's Signature: ____________________________
Date of Departmental Approval: __________________________
Division Dean's Signature: _______________________________
Date approved by Curriculum and Programs: Effective: __________

It is understood that the following course material may be reproduced at any
time for professional use and information.

1. Title: FSC-103 Fire Fighting Tactics and Strategy

2. Description:
   This course is concerned with basic fire fighting tactics and
   strategy; methods of attack; preplanning of fire problems including necessary
   equipment and manpower. Some fire problems will be presented for analysis and
   study, consistent with accepted practices from authoritative sources. The
   concepts of I.C.S. and R.I.C. will be discussed throughout the class. Offered
   evenings only.

3. Student Learning Outcomes (instructional objectives; intellectual skills):
   a) Describe how a fire develops and spreads throughout a structure.
   b) Describe resource requirements.
   c) Define terms and practices used by Fire Officers to mitigate incidents
      they must respond to.
   d) Define terms used by Federal, State and Local agencies when they are to
      interact with one another.
   e) Understand the Incident Command System in Fire Operations
   f) Understand Fire Company operations
   g) Describe the concept of Fire Ground Safety
   h) Understand support functions needed to conduct effective fire suppression

4. Credit(s):
   Three (3)

5. Required or Elective:
   Required for the Fire Science, A.S. Degree Program. Otherwise, an
   elective.

6. Satisfies General Education Core or Distribution Requirement:
   Does not satisfy a Core or Distribution Requirement

7. Prerequisite(s):
   None

8. Level of Course:
   Introductory

9. General Statement of Evaluation:
   Mid-Term, Final, Class Work and completion of Special Projects

10. Content Outline of Course (sufficiently detailed for the reader to
    ascertain the content and topics for the course).
FSC-103 Fire Fighting Tactics and Strategy

1. Introduction
   a. Define Tactics: Strategy
   b. Need for Tactics: Strategy
   c. Importance of Controlled Actions on Fire Ground

2. Development of Fire Fighting
   a. Pre-Modern Times (1950)
      i. Apparatus
      ii. Hose
      iii. Concepts
   b. Modern Times (After 1950)
      i. Apparatus
      ii. Hose
      iii. Concepts

3. Behavior of Fire
   a. What is Fire - Combustion Process
   b. How is it Extinguished
   c. How it Reacts Inside a Building
      i. Products of Combustion
      ii. Spread From Room to Room
   d. How to Extinguish - Theory

4. Removal of Combustion Products
   a. Ventilation
      i. Flashover
      ii. Flash Point
      iii. Flame Spread and Temperature Curve
   b. Heat Absorption
      i. Btu
      ii. Latent Heat of Vaporization
      iii. Loyd Dayman Theory (1950's)
   c. Rotation of Fog Nozzle
      i. Iowa State University Studies
         a. Clockwise
         b. Counter-Clockwise
      ii. Rapid vs. Slow Rotation
      iii. Steam Production vs. Heat Absorption
      iv. How Much Water per Cubic Foot
         a. 1 gallon per 200 cubic feet
   d. Straight Stream vs. Fog
      i. Thermal Balance in Room
      ii. Disadvantages of Fog
         a. Ventilation
         b. Force Fire Back
         c. No Reach
         d. Air Introduction to Fire

5. Man Power Requirements
   a. Engine Company
   b. Ladder Company
   c. Rescue Company
   d. Task Force Concept
   e. Mini-Pumper Concept
   f. Equipment Changes

6. Pre-Fire Planning
   a. Need: Uses
   b. Basic Symbols (Sandburn Map Symbols)
   c. Basic Items Considered

7. Basic Fire Fighting Rules
a. Fried's 14 Points
8. Basic Engine Company Rules
   a. Fried's 20 Points
5. Strategy: Tactics
   a. Manpower Needed
   b. Equipment Needed
   c. Department Size and Limitations
   d. Fire Ground Communications
   e. Chain of Command on Fire Ground
   f. What Chief Officer Should Know
   g. Items Effect Company Operations
   h. Items Influencing Choice of Tactics
   i. Fire Extension
   j. Analyzing Fire Situation
10. Fire Ground Operations
    a. Locating the Fire
    b. Rescue Priorities
    c. Fire Search
    d. Mechanical vs. Natural Ventilation
    e. Exposure
       i. Internal
       ii. External
    f. Priorities of Exposures
    g. Extra Help
    h. Extinguishment
    i. Other Agencies
    j. Basic Action Plan
    k. Fire Ground Leadership
    l. Tactical Fire Ground Principles
    m. Tactical Errors: Weakness
    n. Fire Attack
       i. Offensive
       ii. Defensive
    o. Aggressive Interior Attack
    p. Placement of Companies
11. The Fire Building
    a. Fire Spread
    b. "Fire Proof" Construction
    c. Balloon Flame
    d. Mushrooming of Fire
    e. Fire Walls and Openings
    f. Common Attic; Cellar
    g. Dropped or Suspended Ceilings
    h. Tie Rods and Wall Anchoring
    i. Structural Collapse
    j. Truss Construction
    k. Steel Construction
    l. Concrete Construction
    m. Live - Dead Loads
12. Fire Systems
    a. Sprinkler Operations
       i. Wet
       ii. Dry
       iii. Deluge
       iv. Pre-Action
    b. Shut Down Procedure
    c. Standpipe Operations
       i. Type
       ii. Hose
13. Basic Fire Ground Company Operations
   a. Engine Company
      i. Water on Fire
      ii. Attack Pump Concept
   b. Ladder Company
      i. Many Functions
      ii. Duties of Page 203
      iii. Equipment Assignments
      iv. First in Ladder
      v. Second in Ladder
      vi. Positions of Companies
   c. Moving Water to Fire
      i. Two Piece Engine Company
         a. Pump Wagon
      ii. Supply Line
      iii. Tankers
      iv. Drafting
      v. Fold-A-Tank
   d. Moving Water Into Fire Building
      i. Attack Pre-Connect Lines
         a. 1 1/2", 1 3/4" and 2 1/2" Lines
      ii. Entrance Point
         a. Location of Fire
         b. Purpose of Entry
      iii. Types of Fires in Difficult Areas
         a. Partition Fires
         b. Cockloft Fires
         c. Upper Floor Fires
         d. Cellar Fires

14. Fire Attack - Exterior
   a. Master Stream
   b. Man Power
   c. Prepare for Interior Attack
15. Mercantile Fires
   a. Tax Payer Block
   b. Multi Story
   c. Basement
16. Special Hazards
   a. High Rise Fires
   b. Buildings Under Construction
   c. Tank Farm Fires
   d. Natural Gas Fires
   e. LPG Fires
   f. Motor Vehicle Fires
17. Solving Fire Problems
Cape Cod Community College

Course Syllabus

Prepared by the Department: Social Sciences and Human Services
Department Chair's Signature: _____________________________
Date of Departmental Approval: ____________________________
Division Dean's Signature: ________________________________
Date approved by Curriculum and Programs: Effective: ________

It is understood that the following course material may be reproduced at any
time for professional use and information.

1. Title: FSC-104 Building Construction for the Fire Service

2. Description:
   This course is designed to acquaint the firefighter with both old
   and modern methods of building construction. Weaknesses in construction will
   be shown as well as safeguards which are included in some modern
   construction. Offered evenings only.

3. Student Learning Outcomes (instructional objectives; intellectual skills):
   a) Describe the major elements of common building construction.
   b) Describe the impact of fire on the various construction types.
   c) Understand effect on buildings from fire

4. Credit(s):
   Three (3)

5. Required or Elective:
   Required for the Fire Science, A.S. Degree Program. Otherwise, an
   elective.

6. Satisfies General Education Core or Distribution Requirement:
   Does not Satisfy a Core or Distribution Requirement.

7. Prerequisite(s):
   FSC-100 Introduction to Fire Protection

8. Level of Course:
   Advanced

9. General Statement of Evaluation:
   Course requirements are met by satisfactory achievement in class.
   Weekly quizzes, Mid-Term and Final will each count for one third of the final
   grade.

10. Content Outline of Course (sufficiently detailed for the reader to
     ascertain the content and topics for the course).
FSC-104 Building Construction for the Fire Service

1. Introduction
2. Basic Building Construction
3. Fire Resistance
4. Interior Finishes
5. Wood Construction
6. Ordinary Construction
7. Evaluation of Fire Damage
8. Protection of Openings
9. Fire Resistive and Heavy Timber Construction
10. Concrete in Buildings
11. Buildings Under Construction
12. Steel Construction
Cape Cod Community College

Course Syllabus

Prepared by the Department: Social Sciences and Human Services
Department Chair's Signature: ____________________________
Date of Departmental Approval: __________________________
Division Dean's Signature: ____________________________
Date approved by Curriculum and Programs: Effective: ________

It is understood that the following course material may be reproduced at any time for professional use and information.

1. Title: FSC-107 Hydraulics for the Fire Service

2. Description: This course is concerned with the fundamentals of hydraulics and fluid mechanics as they relate to the firefighter and individuals involved in Fire Protection. Subjects to be studied include: principals of fluid statics, fluid motion, water supply testing, fire pump operation and fire suppression systems.

3. Student Learning Outcomes (instructional objectives; intellectual skills):
   a) Define basic principles of fluid movement.
   b) Describe the basic components of a municipal water supply system.
   c) Describe the main components of a fire pump each works.
   d) Describe how water is moved through hose lines, appliances and nozzles to produce an effective firefighting stream.
   e) Describe the limitations of water supply and pumping apparatus.

4. Credit(s): Three (3)

5. Required or Elective: Required for the Fire Science, A.S. Degree Program. Otherwise, an elective.

6. Satisfies General Education Core or Distribution Requirement: Does not Satisfy a Core or Distribution Requirement

7. Prerequisite(s): MAT030 Elementary Algebra or appropriate score on Placement Test

8. Level of Course: Introductory

9. General Statement of Evaluation: Quizzes, hour exams, class work, Mid-Term, Final and completion of special projects.

10. Content Outline of Course (sufficiently detailed for the reader to ascertain the content and topics for the course).
FSC-107 Hydraulics for the Fire Service

1. Introduction
   a. Hydraulics
      i. Hydrostatics
      ii. Hydrokinetics
   b. Pressure and Force
   c. Devices for Measuring Water Pressure

2. Energy in Fluids
   a. Potential Energy
   b. Bernoulli's Equation

3. Velocity from Nozzles and Orifices
   a. The Continuity of Flow
   b. Devices for Measuring Flow
      i. Venturi Tube
      ii. Pitot Tube
   c. Effects of Altitude
   d. Water Temperature
   e. Hydraulic Losses
   f. Discharge Coefficients

4. Nozzle Reaction
   a. Water Hammer
   b. Friction Loss in Water Conductors
   c. Effect of Flow Pattern on Friction Loss
      i. Laminar Flow
         a. Velocity Effects
      ii. Turbulent Flow
         a. Velocity Effects
   d. Friction Loss in Fire Hose
      i. Five Fundamental Rules
      ii. Common Friction Loss Formulas
   e. The Nozzle Pressure Equation

5. Water Distribution Systems
   a. Hydrants
      i. Types of Hydrants
      ii. Head Loss
         iii. Installation of Hydrants
   b. Main Capacity
   c. Hazen-Williams Coefficients
   d. Pipe Standards

6. Hazen-Williams Equation
   a. Fire Flow Tests
      i. Procedure
      ii. Equipment
      iii. Calculations
      iv. Using Results
   b. Fire Service Pumps
      i. General Information
         a. Pump Horsepower
         b. Brake Horsepower
         c. Capabilities and Limits
         d. Positive Pressure Used
         e. Cavitation
      ii. Single Stage Centrifugal Fire Pumps
      iii. Multi-Stature Centrifugal Fire Pumps
iv. Piston Pumps  
v. Portable Pumps  
vi. Gaging/Priming/Pressure Control  
c. Friction Loss and Calculations  
7. Engine and Nozzle Pressures  
a. Underwriters Formula  
b. Small Lines  
c. Effects of Nozzle Diameter  
d. Back Pressure  
e. Estimating Engine Pressure  
f. Parallel Lines  
g. Nozzle Comparisons  
h. Elevated Hose Lines  
8. Relay Pumping  
9. Fire Streams  
a. Air Resistance  
b. Effect of Air  
c. Nozzle Performance  
d. Chief Causes of Ineffective Streams  
e. Stand Pipes  
10. Automatic Sprinklers
Cape Cod Community College

Course Syllabus

Prepared by the Department: Social Sciences and Human Services
Department Chair's Signature: __________________________
Date of Departmental Approval: __________________________
Division Dean's Signature: __________________________
Date approved by Curriculum and Programs: __________________________

It is understood that the following course material may be reproduced at any time for professional use and information.

1. Title: FSC-108 Fire Investigation and Evidence

2. Description:
   This course will cover the methods used in determining the causes and circumstances of fire. The collecting, preserving of evidence will be covered; also, the preparation of evidence for court.

3. Student Learning Outcomes (instructional objectives; intellectual skills):
   a) Describe the causes of incendiary fires.
   b) Discuss basic chemistry of fire for purposes of understanding fire growth and behavior.
   c) Discuss legal aspects of Arson.
   d) Discuss essential techniques of Fire Investigation.
   e) Understand basic motives of Arson
   f) Determine area of origin at a fire scene
   g) Understand the criminal investigation requirements of fire investigation

4. Credit(s):
   Three (3)

5. Required or Elective:
   Required for the Fire Science, A.S. Degree Program. Otherwise, an elective.

6. Satisfies General Education Core or Distribution Requirement:
   Does not Satisfy a Core or Distribution Requirement.

7. Prerequisite(s):
   FSC-100 Introduction to Fire Protection

8. Level of Course:
   Advanced

9. General Statement of Evaluation:
   Grade will be compiled through quizzes, Mid-Term, Final and a term paper.

10. Content Outline of Course (sufficiently detailed for the reader to ascertain the content and topics for the course).
FSC-108 Fire Investigation and Evidence

1. Introduction
   a. Reasons for Setting Incendiary Fires

2. Elementary Chemistry of Fire
   a. Combustion
   b. Nature and Behavior of Gases
   c. Combustion Properties of Non-Solid Fuels
   d. Combustion Properties of Solid Fuels

3. Pyrolysis and Fire Patterns in Structural and Outdoor Fires

4. Sources of Ignition

5. Automobile, Boat, Clothing and Fabric Fires

6. Items to Look for in Determining Arson Intent

7. Practical Investigation of Structural Fires
   a. Laws on Attempts to Burn
   b. Law on Burning a Dwelling House
   c. Fire Manual Investigation of Fire

8. Legal Aspects of Arson

9. Essential Points in Fire Investigation
   a. Preparation of Evidence
   b. Protecting and Preserving Evidence
   c. Securing Convictions

10. Carbon Monoxide Asphyxiation

11. Explosions Associated with Fires

12. Building Constructing Materials
Cape Cod Community College

Course Syllabus

Prepared by the Department: Social Sciences and Human Services
Department Chair’s Signature: ________________________________
Date of Departmental Approval: ____________________________
Division Dean’s Signature: ________________________________
Date approved by Curriculum and Programs: Effective: ________

It is understood that the following course material may be reproduced at any
time for professional use and information.

1. Title:
   FSC-109 Fire Department Management and Planning

2. Description:
   An exploration of organization principles with emphasis on fire
department organization; a study of history, types, methods and principles of
fire department organization; insurance and fire defense, personnel and
equipment, water supply, departmental functions and administrative problems.

3. Student Learning Outcomes (instructional objectives; intellectual skills):
   a) Describe basic organizational and management principles.
   b) Define practices used to plan maintain a modern Fire Department.
   c) Discuss budget preparation and management
   d) Discuss the relationship of labor management in the fire service
   e) Discuss interaction of various municipal agencies with the fire department

4. Credit(s):
   Three (3)

5. Required or Elective:
   Required for the Fire Science, A.S. Degree Program. Otherwise, an
elective.

6. Satisfies General Education Core or Distribution Requirement:
   Does not satisfy a Core or Distribution Requirement

7. Prerequisite(s):
   FSC-100

8. Level of Course:
   Advanced

9. General Statement of Evaluation:
   Quizzes
   Term Paper
   Mid-Term
   Final

10. Content Outline of Course (sufficiently detailed for the reader to ascertain
    the content and topics for the course).
1. Introduction to Modern Management
2. Management Cycle, Conduction Meetings
3. Management by Objectives
4. Fire Service Personnel Management
5. Labor Relations, Negotiations and Grievances
6. Fireground Command Management Functions, ICS
7. Management of Physical Resources
8. Management of Financial Resources
I. Title:
FSC-110 Fire Codes and Ordinances

2. Description:
This course will review the codes which influence the field of fire prevention including the fire prevention regulations of the Commonwealth of Massachusetts (527 CMR). Also included will be Chapters 48, 143 and 148 of the General Laws of the Commonwealth as well as the Massachusetts Building Code, the codes of the National Fire Protection Association will be reviewed. Offered evenings only.

3. Student Learning Outcomes (instructional objectives; intellectual skills):
   a) Describe the development of codes and ordinances that effect fire and life safety.
   b) Know where to locate the appropriate code, law, etc. for a specific hazard.
   c) Describe the process code and ordinance enforcement.
   d) Understand the code development and interpretation process

4. Credit(s):
   Three (3)

5. Required or Elective:
   Required for the Fire Science, A.S. Degree Program. Otherwise, an elective.

6. Satisfies General Education Core or Distribution Requirement:
   Does not satisfy a Core or Distribution Requirement

7. Prerequisite(s):
   None

8. Level of Course:
   Introductory

9. General Statement of Evaluation:
   Mid-Term
   Final
   Class
   Project

10. Content Outline of Course (sufficiently detailed for the reader to ascertain the content and topics for the course).
FSC-110 Fire Codes and Ordinances

1. Introduction to M.G.L. and Code of Massachusetts Regulations
   Chapters 148, 48 & 143
   CMRs 527, 780, 310 and 105

2. 527 CMR Articles 2, 3, 4, 6, 7, 8, 9 and 10

3. 527 CMR Articles 11, 13, 14, 15, 16, 17, 18 and 19

4. 527 CMR Articles 20, 21, 22, 23, 24, 25, 26, 28, 34, & 35

5. 527 CMR Articles 39, 49 & 50

6. 780 CMR Articles 1, 2, 4, & 6

7. 780 CMR Articles 9, 21, 22 & N.F.P.A. Codes

8. 105 & 310 CMR

9. Code Applications Chapter 48

10. Complaint Procedures

11. Court Procedures
Cape Cod Community College

Course Syllabus

Prepared by the Department: Social Sciences and Human Services

Department Chair's Signature: ____________________________
Date of Departmental Approval: ____________________________
Division Dean's Signature: ____________________________
Date approved by Curriculum and Programs: ____________________________ Effective: ____________________________

It is understood that the following course material may be reproduced at any time for professional use and information.

1. Title:
   FSC-114 Fire Company Management

2. Description:
   A study of the scope and functions of the fire company officer in the fire department. Topics discussed include: the role of the fire service, departmental procedures, administrative and management procedures, training, public relations, tactics and strategy and fire prevention.

3. Student Learning Outcomes (instructional objectives; intellectual skills):
   a) Define the role of the Fire Service.
   b) Discuss the importance of an effective fire company.
   c) Discuss the importance of a smooth transition from Firefighter to that of an Officer.
   d) Discuss supervisory practices and concepts of a company officer.
   e) Define the company officers role and responsibilities in the pre-fire planning process.
   f) Discuss fire scene management concepts

4. Credit(s):
   Three (3)

5. Required or Elective:
   Required for the Fire Science, A.S. Degree Program. Otherwise, an elective.

6. Satisfies General Education Core or Distribution Requirement:
   Does not Satisfy a Core or Distribution Requirement

7. Prerequisite(s):
   FSC-100 Introduction to Fire Protection

8. Level of Course:
   Advanced

9. General Statement of Evaluation:
   Course requirements are met by satisfactory achievement in class tests, hour and Final examinations, and by satisfactory completion of projects and reports.

10. Content Outline of Course (sufficiently detailed for the reader to ascertain the content and topics for the course).
FSC-114 Fire Company Management

1. Introduction
   a. The Supervisor looks at his Job

2. Organization and the Fire Officer
   a. Developing leadership Skills

3. Non-Fire Fighting Activities of the Fire Officer
   a. Basic Concepts of Organization and Management

4. Fire Fighting Activities of the Fire Officer
   a. Planning and Organizing the Work
   b. Directing the Work
   c. Developing and Maintaining Discipline

5. Fire Protection Facilities
   a. Supervisory Counseling Skills

6. Pre-Fire Planning
   a. Employee Complaints and Grievances
   b. Evaluating Worker Performance

7. Fire Fighting Procedures
   a. Job Instruction
   b. Employee Safety
   c. Cooperation within the City Service
   d. Public Relations
Cape Cod Community College

Course Syllabus

Prepared by the Department: Social Sciences and Human Services
Department Chair's Signature: ___________________________
Date of Departmental Approval: _______________________
Division Dean's Signature: ____________________________
Date approved by Curriculum and Programs: Effective: ______

1. Course Number: FSC-115
   
   Course Title: Introduction to Technical Rescue

2. Description:
   The student will receive instruction in the basic concepts of technical rescue. An explanation of related equipment, regulations and procedures to supervise and conduct technical rescue operations will be explained.

3. Student Learning Outcomes (instructional objectives; intellectual skills):
   a) Discuss concepts, regulations, equipment, and procedures used in technical rescue operations.
   b) Describe practices and procedures for scene safety.
   c) Understand equipment and procedures needed for various Technical Rescue Operations

4. Credit(s):
   Three (3) credits

5. Required or Elective:
   Elective

6. Satisfies General Education Core or Distribution Requirement:
   No

7. Prerequisite(s):
   None

8. Level of Course:
   Introductory

9. General Statement of Evaluation:
   Quizzes
   Mid-Term Exam
   Final Exam

10. Content Outline of Course (sufficiently detailed for the reader to ascertain the contents and topics for the course):
    See Attached outline.
FSC-115 Introduction to Technical Rescue
Course Outline

Course introduction and overview
1. 1st response duties
2. Initial size up and reporting

Confined spaces and hazards
1. Definitions
2. Hazard recognition
3. Permit and non-permit locations

Entry Requirement
1. Confined space program and rescuer
2. Asset vs. liability status

Air monitoring
1. Combustible gases/oxygen deficient atmosphere
2. Gas and oxygen monitoring equipment
3. Understanding equipment readings

Incident Security
1. Lockout-tagout requirements

Incident Command Systems
1. Unity of command
2. Span of control
3. Resource management
4. Safety
5. Applying command system to rescue scene

Practical Usage
1. Class trip to a technical rescue unit or facility for hands on demonstration of monitoring equipment and rescue gear
2. Review of course material for Mid-Term

Summary and Mid-Term

Strategic Rescue Factors
1. Basic rescue size-up
2. Incident priorities

Ventilation and inverting
1. Theory and practice to stabilize atmosphere at scene

Safety
1. Safety for
   A. victims
   B. rescue personnel
   C. Bystanders-neighbors
2. Personal protective equipment
Rescue

1. Rescue Considerations
   A. Equipment
   B. Initial operations
2. Victim assessment

Standard operating procedures
1. Written SOP’s
2. Checklists

Rescue equipment
1. Rescue equipment and uses
Course Syllabus

Prepared by the Department: Social Sciences and Human Services

Department Chair's Signature: ____________________________
Date of Departmental Approval: ____________________________
Division Dean's Signature: ____________________________
Date approved by Curriculum and Programs: Effective: ___________

1. Course Number: FSC-130
Course Title: Shipboard Firefighting

2. Description: This course is designed to give the students an understanding of the maritime industry by providing information on maritime terminology, ship construction, firefighting shipboard fire protection systems and shipboard firefighting. The course focuses on the necessary tactic and strategies needed to deal with a maritime fire as well as the various agencies that can provide assistance in dealing with a shipboard fire. Students will be given a tour of a ship, during which time the systems will be explained and the shipboard fire fighting problems discussed.

3. Student Learning Outcomes (instructional objectives; intellectual skills):
   a) Describe the similarities and dissimilarities of tactics and strategies used in fighting fire aboard sea going vessel with land based fire resources.
   b) Describe ship construction and problems that would affect fire control.

4. Credit(s): three (3) credits

5. Required or Elective: elective

6. Satisfies General Education Core or Distribution Requirement: No

7. Prerequisite(s): None

8. Level of Course: Introductory

9. General Statement of Evaluation:
   Quizzes
   Mid-Term
   Final
10. Content Outline of Course (sufficiently detailed for the reader to ascertain the contents and topics for the course):

1. Introduction, Fire Science and Chemistry
2. Vessel Types, Construction
3. On Board Fire Fighting Equipment
4. Maritime Extinguishers
5. Maritime Water Firefighting Stations
6. Maritime Foam Firefighting Systems
7. Fire & Smoke Detection Systems
8. Fixed Fire Suppression Systems
9. Pre-Incident Planning & General Firefighting
10. Ship Tour
11. Incident Management, Safety, Damage Control and Dewatering
12. Incident Management
   a. in open water
   b. in port
   c. aground
1. Course Number: FSC200
   Course Title: Special Topics in Fire Science
2. Description: This course will serve to deepen student's knowledge of subjects in Fire Science introductory courses and explore timely issues outside the established curriculum.
3. Student Learning Outcomes (instructional objectives: intellectual skills):
   • Students will analyze research information and best practices in fire science incident management
   • Students will use research on issues and best practices in fire science to critically examine current issues in fire science and incident management
   • Students will integrate oral communication, written communication, and group activities in examination of current issues in fire science and incident management
   • Students will use fire science concepts and principles to critically assess fire protection and fire prevention regulations, strategies and techniques
4. Credits(s): 1, repeatable for a maximum of 3 credits
5. Required or elective: Elective
6. Satisfies General Education Core or Distribution Requirement: Satisfies Fire Science Option elective or Medical Services Option elective
7. Prerequisite(s): Any introductory level fire science course
8. Level of Course: Advanced
9. General Statement of Evaluation: The final grade will include an assessment of written assignments, class project (may include an examination), and class participation.
10. Content Outline of Course (Sufficiently detailed for the reader to ascertain the contents and topics for the course): Topics will vary each time that the course is offered. The faculty of the Fire Science Program will approve the outline each time it is offered.
Cape Cod Community College

Course Syllabus

Prepared by the Department of ______________________________
Department Chair's Signature: ______________________________
Date of Departmental Approval: ______________________________
Division Dean's Signature: ______________________________
Date approved by Curriculum and Programs: __________________

1. Course Number: EMS 101
   Course Title: Emergency Technician: EMT

2. Description:
   Designed to train participants to work with existing agencies which provide
   emergency medical services to the public. Included in these services are first-aid
   procedures, operation of emergency equipment, and knowledge of communications
   systems associated with emergency and rescue operations. Students gain knowledge
   and skills relating to medical and emergency technology within the laboratory and
   clinical settings. Students will be assigned clinical experience in area hospitals. The
   students are eligible for state certification upon successful completion of course and
   state examination. Special tuition is charged for this course.

3. Student Learning Outcomes (instructional objectives: intellectual skills):
   • Demonstrate the ability to comprehend, apply, and evaluate the clinical
     information relative to the role of an entry level Emergency Medical Technician
     (EMT)
   • Demonstrate technical proficiency in all skills necessary to fulfill the role of an
     entry level EMT
   • Demonstrate personal behaviors consistent with professional standards and
     employer expectations for the entry level EMT

4. Credits(s): 5 credits

5. Required or elective: Required for Fire Science Program: Emergency Services
   Option

6. Satisfies General Education Core or Distribution Requirement: No

7. Prerequisite(s): None
8. Level of Course: Basic

9. General Statement of Evaluation:
   Written examinations, laboratory practical skills competency examinations

10. Content Outline of Course (Sufficiently detailed for the reader to ascertain the contents and topics for the course):
    See attached content outline
Content Outline for Emergency Medical Technician: EMT

1. Introduction to Emergency Care
2. Medical, Legal, and Ethical Issues
3. Record, Reports & Documentation
4. Infection Control
5. Communicable Diseases
6. Bloodborne and Airborne Pathogens
7. Lifting and Moving Patients
8. Baseline Vital Signs and History Taking
9. Assessing the Scene
10. Airway & Respiratory System: Anatomy and Physiology and Airway Management
11. Adjunct Airway Equipment
12. Oxygen therapy and Equipment
14. Initial Assessment: focused History & Physical Examination - Trauma
15. Initial Assessment: focused History and Physical Examination - Medical
16. Ongoing Examination
17. Respiratory Emergencies: COPD, Asthma
18. General Respiratory Pharmacology
19. Cardiac Emergencies: Anatomy and Physiology of the Cardiovascular System
20. Chest Pain, Heart Attack, and Angina
21. General Cardiac Pharmacology
22. Cardiac Emergencies: SAED Principles and Practices
23. Diabetic Emergencies and Altered Mental States
24. General Diabetic Pharmacology
25. Cerebrovascular Accident (CVA) and Seizures
26. Allergies, Anaphylactic Shock
27. Poisoning
28. General Pharmacology - Poisoning
29. Obstetrics
30. Bleeding and Shock: Bandaging Techniques, PASG/MAST
31. Musculoskeletal Injuries: Anatomy and Physiology of the Musculoskeletal System
32. Overdoses: Drugs and Alcohol
33. Environmental Emergencies
34. Soft tissue Injuries
35. Anatomy and Physiology of Skin
36. Facial, Throat and Eye Injuries
37. Infant and children
38. Chest and Abdominal Trauma: Anatomy and Physiology of the chest and Abdomen
39. Head and Skull injuries: Anatomy and Physiology of the Central Nervous System
40. Treatment of Head Injury
41. Ambulance operations
42. Gaining Access to the Scene
43. Hazardous Materials and Triage
44. Spinal injuries: Treatment

Practical Skills Labs:
- Lifting and Moving
- CPR/BLS Mannequin Practice
- Initial Assessment: History and Physical Trauma and Medical, Communication and Documentation
- Patient Assessment: Bleeding/Shock
- Patient Assessment: Musculoskeletal Care
- Medical Emergencies
- Detailed Physical Examination and Ongoing Physical Examination
- Trauma Skills
- Medical, Obstetric, Behavioral
- Trauma Skills
- Infants and Children
Course Syllabus

1. Course Number: EMS201
   Course Title: Advanced Pre-hospital Training Program: Paramedic I

2. Description: Roles and responsibilities of the EMT/Paramedic including medical history and physical assessment techniques, pathophysiology and management of shock, cardiac, respiratory, neurological, and abdominal emergencies, and overview of emergency medical services communication systems. Students perform skills under the supervision of a clinical preceptor in a variety of clinical sites, including critical care units, operating rooms, emergency departments, and renal dialysis departments. Special tuition is charged for this course which is offered in the fall. Students must demonstrate one year of state or national certification as Emergency Medical Technician/Basic or Emergency Medical Technician/MAST. Successful completion of pre-testing and interview process administered by Cape and Islands Emergency Medical Services System, Inc. is required.

3. Student Learning Outcomes (instructional objectives: intellectual skills):
   - Describe the roles and responsibilities of a Paramedic within the EMS system
   - Apply the basic concepts of development, pathophysiology, and pharmacology to assessment and management of emergency patients
   - Administer medications safely and accurately within protocols
   - Use appropriate interpersonal techniques to communicate effectively with patients, patients' significant other(s), colleagues, other health team members, and community members
   - Describe legal and ethical issues that relate to decisions made in the out-of-hospital environment
   - Identify strategies to maintain personal wellness and deal effectively with the stress
   - Safely and precisely access venous circulation and administer fluids and medications
   - Accurately and safely establish and/or maintain a patent airway, oxygenate, and ventilate a patient
   - Describe and document a proper history and perform a comprehensive physical examination, and communicate the findings to others according to standards
   - Integrate pathophysiological and psychosocial principles to adapt the assessment and treatment plan for diverse patients who face physical, mental, social, and financial challenges
4. Credits(s): 7 credits

5. Required or elective: Required for Associate Degree in Fire Science: Emergency Medical Services Option and Paramedic Certificate Program

6. Satisfies General Education Core or Distribution Requirement: No

7. Prerequisite(s): None

8. Level of Course: Introductory

9. General Statement of Evaluation:
   Unit written and skills practical examinations
   Final written and practical comprehensive examination

10. Content Outline of Course (Sufficiently detailed for the reader to ascertain the contents and topics for the course):
    See attached content outline
EMS201 Advanced Pre-Hospital Training Program: Paramedic I
Content Outline

1. Role and Responsibilities of the EMT/Paramedic
2. The EMS System
3. HIPPA: Orientation and Training
4. SARF Documentation Techniques
5. Critical Incident Stress Management
6. Human Anatomy and Physiology: Systems Overview
7. Medical Terminology
8. Medical – Legal- Ethical Considerations for the EMT/Paramedic
9. Patient Assessment
10. Therapeutic Communication
11. Clinical Decision-making Skills
12. Assessment-Based Patient Care Management
13. Shock and Fluid therapy
14. Intravenous Therapy and Fluid Therapy Procedures
15. Obstetrical/Gynecological Emergencies
16. The Respiratory System: Acid-Base Balance
17. The Respiratory System: Airway Management Procedures, Airway adjuncts, Mechanical Aids to Resuscitation, Airway tubes including endotracheal tube, Combi-Tube, LMA, and Nasogastric-Orogastric tube, Intubation procedures
18. Patients with psychiatric/behavioral problems
19. Drug Calculations and Medication Formats
20. General Pharmacology
21. Medication Administration Skills
Cape Cod Community College

Course Syllabus

Prepared by the Department of ________________________________
Department Chair's Signature: ________________________________
Date of Departmental Approval: ________________________________
Division Dean's Signature: ________________________________
Date approved by Curriculum and Programs: ____________________ Effective: ______

1. Course Number: EMS202
   Course Title: Advanced Pre-Hospital Training Program: Paramedic II

2. Description:
   Assessment and management of emergencies and obstetrics, gynecology, trauma, pediatrics, adolescent medicine, and geriatrics. Students perform skills under the supervision of a clinical preceptor in a variety of clinical sites, including critical care units, operating rooms, emergency departments, pediatric intensive care units, labor and delivery rooms, and psychiatric units. Students respond to emergency medical service calls and perform paramedic skills as part of an advanced life support ambulance crew under the supervision of a field preceptor. Special tuition is charged for this course. Offered in the Spring.

3. Student Learning Outcomes (instructional objectives: intellectual skills):
   • Integrate pathophysiological principles and assessment findings to formulate a field impression and implement a treatment plan for a trauma patient
   • Integrate pathophysiological principles and assessment findings to formulate a field impression and implement a treatment plan for a medical patient
   • Integrate pathophysiological principles and assessment findings to formulate a field impression and implement a treatment plan for neonatal, pediatric, and geriatric patients, diverse patients, and chronically ill patients
   • Integrate pathophysiological principles and assessment findings to formulate a field impression and implement a treatment plan for patients with common complaints
   • Safely manage the scene of an emergency including effective ground and air transport, general incident management, and multiple casualty incident management

4. Credits(s): 8 credits

5. Required or elective: Required for the Associate Degree in Fire Science: Emergency Medical Services Option and the Paramedic Certificate Program

6. Satisfies General Education Core or Distribution Requirement: No
7. **Prerequisite(s):** EMS201

8. **Level of Course:** Advanced

9. **General Statement of Evaluation:**
   Unit written examinations and skills practical examinations
   Final written and practical comprehensive examination

10. **Content Outline of Course (Sufficiently detailed for the reader to ascertain the contents and topics for the course):**
    See attached content outline
Content Outline for EMS202 Advanced Pre-hospital Training Program: Paramedic I

Trauma Management
- Assessment Skills
- Shock Management Skills
- Airway Management Skills
- Extremity Trauma Skills
- Burn Management
- Spinal Injury Management

Cardiovascular System
- Electrical Therapies
- EKG Interface
- EKG Skills: Static and Dynamic Skill Practice
- Cardiac Monitoring Scenarios
- Static and Dynamic Scenarios
- Cardiac Pharmacological Intervention Skills
- 12 Lead EKG Interpretation and Diagnosis
- ACLS Preparation
- Interactive Cardiac Patient Management Scenarios

Pediatric Emergencies
- Developmental Stages in Children
- Pediatric Assessment Guidelines
- Pediatric Trauma Overview
- Pediatric Medical Emergencies

Central Nervous System (CNS)
- CNS Assessment techniques
- P.A.S.G. Review
- Long Spine Board Skills
- Short Spine Board Skills: KED Immobilization
- Extremity Splinting
- Soft Tissues

Burn Pathophysiology
- Burn Patient Management

Musculoskeletal Injuries

Medical Emergencies
- Endocrine
- Anaphylaxis
Medical Emergencies continued
- Alcoholism and Drug Abuse
- Toxicological Emergencies
- Geriatric Emergencies
- Acute Abdominal Problems

Medical Patient Evaluation Formats

Mass Casualty Incident Response
- The START Triage System
- Incident Command Principles
- Rescue Awareness and Operations

Telemetry and Communications Procedures

Introduction to Hazardous Materials

ACLS Review
Cape Cod Community College

Course Syllabus

Prepared by the Department of Health Sciences
Department Chair's Signature: _______________________
Date of Departmental Approval: _____________________
Division Dean's Signature: _________________________
Date approved by Curriculum and Programs: Effective: _____

1. Course Number: EMS-205
   Course Title: Advanced Public Safety Telecommunicator

2. Description:
   The student will receive instruction in operation of public safety communication centers. Upon successful completion, students will receive certification from Association Public Safety Officials (APCO). The student must demonstrate proof of current certification in Cardio-Pulmonary Resuscitation (CPR).

3. Student Learning Outcomes (instructional objectives; intellectual skills):
   • Demonstrate the role of an effective public safety dispatcher
   • Analyze the legal liability issues in emergency medical dispatching
   • Formulate strategies using interpersonal communication techniques to obtain critical information and provide assistance during emergency medical dispatch calls
   • Apply essential medical concepts to respond effectively in emergency medical calls
   • Integrate the quality assurance process to assure responses comply with established standards
   • Use national performance standards and protocols to evaluate calls and intervention
   • Function as an Association of Public Safety Officials (APCO) certified emergency call taker in a police, fire, or emergency medical services system

4. Credit(s):
   Three (3) credits

5. Required or Elective:
   Elective

6. Satisfies General Education Core or Distribution Requirement:
   No

7. Prerequisite(s):
   EMS-105 Basic Public Safety Telecommunicator

8. Level of Course:
9. General Statement of Evaluation:
   Mid-Term, Practical and Final Examinations

10. Content Outline of Course (sufficiently detailed for the reader to
    ascertain the contents and topics for the course)

   EMS-205
   Program Introduction
   1. Critical role of the dispatcher in the EMS system
   2. Vital links which comprise the Chain of Survival
   3. Criteria Based Dispatch Program
   4. History of EMD

   Legal and Liability Issues in Emergency Medical Dispatch
   1. Liability
   2. Liability exemptions and dispatcher immunity
   3. Negligence and how courts determine negligence
   4. Standard of Care
   5. Abandonment
   6. Types of Consent
   7. Issues about confidentiality
   8. Litigation and how to avoid it

   Emergency Medical Concepts
   1. Systems of the body
   2. What really kills a patient
   3. Shock
   4. Methods for dealing with bleeding patients and patients in shock
   5. Levels of consciousness and how to determine them

   Obtaining Information from Callers
   1. Primary responsibilities of the EMD when call taking
   2. Interpersonal qualities and attitude that the EMD is required to exhibit
   3. Essential items of information that the EMD must obtain from each caller who requests EMS assistance
   4. Obtaining and recording essential information from callers in the correct sequence

   Resources Allocation
   1. Resources available in the EMS system
   2. Pre-configured response modes
3. Appropriate resources to be allocated by consideration of:
   a. nature of the problem
   b. personnel and equipment available
   c. vehicle proximity to the patient
   d. EMS unit coverage zones
   e. Types of equipment and trained personnel carried by each resource

Resources Allocation - continued

Providing Emergency Care Instructions
  1. Philosophy behind providing emergency care instructions
  2. Requirements for creating effective communication between the EMD and the caller
  3. Delivery of effective telephone medical instructions

Introduction to Emergency Medical Dispatch Protocol Reference System
  1. Categories of protocols within the EMDPRS
  2. Design components of each protocol
  3. Purpose and kinds of information found in each protocol

Chief Complaint Types
  1. Processing the information on the chief complaints in conjunction with the information in the EMSPRS to appropriately:
     a. prioritize emergency calls
     b. dispatch the appropriate response
     c. provide appropriate pre-arrival instructions

Quality Assurance
  1. Understanding the importance of QA to EMD
  2. Importance of feedback and performance monitoring to EMD
  3. Understanding the number of hours of Continuing Dispatch Education that are accepted for EMD recertification
  4. Understanding the ASTM 1560-94 standard for refusal, suspension or revocation of certification

Interface with Police and Fire Dispatches
  1. Co-ordination
2. Back up
3. Mutual Aid
4. Political problems

Practical Demonstrations of APCO Institute EMSPRS
1. Practical Scenarios

Practical Demonstrations of APCO Institute EMSPRS
1. Practical Scenarios

Review
Practical Examination
Cape Cod Community College

Course Syllabus

Prepared by the Department: Health Sciences
Department Chair's Signature: _______________________
Date of Departmental Approval: _______________________
Division Dean's Signature: _______________________
Date approved by Curriculum and Programs: Effective: _______________________

1. Course Number: EMS-105
   Course Title: Basic Public Safety Telecommunicator

2. Description:
   The student will receive instruction in basic operation of public safety communication centers. Upon successful completion, students will receive certification from APCO (Association Public Safety Officials).

3. Student Learning Outcomes (instructional objectives; intellectual skills):
   - Identify the structure, mission, and roles within the emergency medical telecommunicator system
   - Discuss ethical issues and values related to telecommunication
   - Identify telecommunicator policies and procedures
   - Describe resources used for effective telecommunication
   - Describe legal issues related to emergency medical dispatching
   - Identify effective interpersonal communication terms, definitions, and techniques
   - Adapt the interpersonal communication process for emergency medical dispatching responses
   - Use appropriate telecommunication technologies to communicate effectively with callers with adaptive needs
   - Use established protocols in the use and management of computer aided dispatch systems
   - Discuss principles and techniques for telephone communication
   - Perform basic emergency call taker activities in accordance with national standards

4. Credit(s):
   Three (3) credits

5. Required or Elective:
   Elective

6. Satisfies General Education Core or Distribution Requirement:
   No
7. Prerequisite(s): None
8. Level of Course:
   Introductory

9. General Statement of Evaluation:
   Mid-Term, Skills Practical and Final Examinations

10. Content Outline of Course (sufficiently detailed for the reader to ascertain the contents and topics for the course):
    See Attached outline.

   EMS-105 Basic Public Safety Telecommunicator
   Course Outline

Program Introduction
   1. Organizational structure
   2. Mission statement
   3. Ethics and values – how they apply to the telecommunicator

Roles and responsibilities of public safety organizations

Telecommunicator mission and communications systems
   1. Vital services that define the mission of the communications system
   2. Providing adequate levels of service to the public
   3. Telecommunicator characteristics and skills

Dispatch policies and procedures. The service area
   1. Policy and procedure
   2. Structure, format and general policy
   3. Risk management and liability exposure
   4. Physical and political boundaries of home jurisdiction
   5. Various agencies within home jurisdiction

Communications resources
   1. General resources
   2. Specific resources
   3. Handling media questions and release of information
   4. Regulations on confidentiality and maintaining confidentiality of information

Legal considerations
   1. History of liability claims
   2. Phases of dispatch and their relationship to liability claims
   3. Ministerial duty and discretionary acts
   4. Inadequate service, unlawful use of powers, lack of service and internal complaints
   5. Liability exposure regarding fire and rescue incidents
   6. Liability exposure regarding EMS incidents

Interpersonal communications process
   1. Terms and definitions
   2. Communications cycle

Communications techniques and information processing
   1. Timely and accurate interpersonal communications
2. Observations, inferences and useless information
3. Active listening techniques
4. Proper diction
5. Customer service
6. Barriers and techniques for service to the hearing and/or speech impaired
7. Procedures and protocols for non-english speaking people

Communications technologies
1. Telephones
   A. General configuration
   B. Portable home telephones
   C. PCS/cellular telephones

E-911 and speech/hearing impaired
1. Basic and Enhanced 911 systems
2. ANI (Automatic Number Identification)
3. ALI (Automatic Location Identification)
4. Tracing calls
5. Text Telephones (TTY)

Computer aided dispatch
1. Basic components of computer systems
2. CAD network
3. Protocols for CAD system
4. Procedures for handling a failure of the CAD system
5. Mobile data systems components and operations
6. Map tools
7. Logging recorders
8. Recording equipment
9. Radio technology
10. Operator Control Systems
11. FCC rules and regulations

Telephone communication techniques
1. Basic principles
2. Procedures for multiple incoming calls
3. Call routing, call transfer, call relay and call referral
4. Techniques for:
   A. obtaining proper, pertinent information
   B. dealing with challenging callers
   C. handling “in progress” or immediate response calls for police service, emergency medical calls and fire calls
   D. handling of routine and urgent messages for department personnel
<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>READING(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>07-SEP-04 Introduction</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>14-SEP-04 Leadership and the Chief Officer</td>
<td>QUIZ -Chapter 1</td>
</tr>
<tr>
<td>03</td>
<td>21-SEP-04 Basic Communications Skills</td>
<td>QUIZ -Chapter 2</td>
</tr>
<tr>
<td>04</td>
<td>28-SEP-04 Basic Administration Skills</td>
<td>QUIZ -Chapter 3</td>
</tr>
<tr>
<td>05</td>
<td>05-OCT-04 Supervision &amp; Management</td>
<td>QUIZ -Chapter 4</td>
</tr>
<tr>
<td>06</td>
<td>12-OCT-04 Logic, Ethics, and Decision-Making</td>
<td>QUIZ -Chapter 5</td>
</tr>
<tr>
<td>07</td>
<td>19-OCT-04 Human Resource Management</td>
<td>QUIZ -Chapter 6</td>
</tr>
<tr>
<td>08</td>
<td>26-OCT-04 MID TERM</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>02-NOV-04 Community Relations &amp; Government Relations</td>
<td>Chapters 7 and 8</td>
</tr>
<tr>
<td>10</td>
<td>09-NOV-04 Admin. Structures &amp; Admin. Programs</td>
<td>QUIZ -Chapters 9 &amp; 10</td>
</tr>
<tr>
<td>11</td>
<td>16-NOV-04 Administration of Emergency Services in Mass.</td>
<td>QUIZ -Lecture</td>
</tr>
<tr>
<td>12</td>
<td>23-NOV-04 Fire Prevention &amp; Life Safety Programs</td>
<td>QUIZ -Chapter 11</td>
</tr>
<tr>
<td>13</td>
<td>30-NOV-04 Emergency Services Delivery</td>
<td>QUIZ -Chapter 12</td>
</tr>
<tr>
<td>14</td>
<td>07-DEC-04 Comprehensive Safety &amp; Health Programs</td>
<td>QUIZ -Chapter 13</td>
</tr>
<tr>
<td>15</td>
<td>14-DEC-04 FINAL EXAM</td>
<td></td>
</tr>
</tbody>
</table>

The textbook for this class is:

Fredrick M. Stowell, Project Manager et al., Chief Officer, 2nd ed., (USA: IFSTA, 2004)
Textbooks referenced for this course include:

**TESTING & TERM PAPER REQUIREMENTS**

**QUizzes:**
There will be a total of ten quizzes given (weeks 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, and 14). They will contain short questions on the material covered in the previous class. The quizzes will be given at the start of class.

I WILL TOTAL YOUR QUIZ SCORES AND DIVIDE THAT FIGURE BY NINE TO OBTAIN YOUR AVERAGE QUIZ SCORE. THE COMBINED QUIZ SCORES, WHEN AVERAGED, WILL ACCOUNT FOR 20% OF THE TOTAL GRADE.

**Mid-Term and Final Examinations:**
Both exams cover material offered up to that date. The final exam will only include material covered after the mid-term exam.

BOTH THE MID-TERM AND THE FINAL EXAMINATIONS WILL EACH ACCOUNT FOR 40% OF THE TOTAL GRADE.

**Class Paper:**
A class paper is NOT required for this course. If extra credit work is desired you may submit a paper. The paper must conform to the following requirements;

The paper must be typewritten. The paper shall be no less than 4 pages in length and no more than 6 pages in length. The subject matter of the paper shall outline a management problem and include your solutions for the problem. You are required to turn in your topic for the paper no later than week number 6 (16-OCT-01). The paper is due no later than week number 13 (30-NOV-04).

THE CLASS PAPER CAN ADD NO MORE THAN 10 POINTS (10%) TO YOUR TOTAL GRADE.
**BONUS QUESTIONS:**

Bonus questions, when offered, will have a written worth assigned to them. Incorrect, incomplete answers and/or failure to answer a bonus question will not be held against the score of the exam being taken. Answering bonus questions can only improve your grade. Partial credit will be given when applicable.

**EXAMINATION MAKE-UP, AND LATE PAPERS.**

There will be no make-up of missed quizzes.
Make-up mid-term and final exams will normally have grade deductions of 20% applied. If you have a conflict with the schedule please make arrangements with me in advance and you will be able to avoid a grade deduction.
Late papers will have a 20% grade deduction applied for each week they are late.

**ATTENDANCE & STUDENT RESPONSIBILITIES**

The college allows no more than two unexcused absences per semester. I understand that work schedules and personal emergencies can conflict with your ability to attend. I will not fail anyone based upon their attendance record alone. Failure to attend at least nine of the quiz nights can have a negative impact on that portion of your grade.

Taking both the mid-term and final examinations are required to pass the course.
We will be covering material in class that is not provided in the text. You will be responsible to know the material from the book even if it was not covered in class (unless I tell you otherwise) as well as the material covered in class.

When handouts are provided I normally have extras should you lose yours or miss a class.
If, during the semester, you experience difficulties in the class or an emergency arises please see me at the earliest possible time so that we can make appropriate arrangements.

**SPECIAL ATTENTION:**

Grades need to be in within a short time after the Final Exam. If you miss the exam and I don't hear from you I will submit a grade of “F” for you. It is your responsibility to contact me to make up the Final Exam. I cannot enter an incomplete grade without “entering into a contract with you” to plan for completion of the program.

**MAKE UP DAYS**

The College will schedule make up day(s) to provide students with the required contact hours should a holiday(s) interrupt our class schedule. We can make arrangements to make up this time in another manner if we so desire. The important factor is to properly and completely cover the materials scheduled for those evenings. We will discuss the specific days and our plans during night one and formulate a plan. If we do not reach a consensus we will follow the College schedule.
<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>READING(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 10-SEP-03</td>
<td>Course Introduction</td>
<td></td>
</tr>
<tr>
<td>02 17-SEP-03</td>
<td>Water Supply for Sprinklers Systems</td>
<td>Lecture</td>
</tr>
<tr>
<td>03 24-SEP-03</td>
<td>Basic Sprinkler Operation (Quiz 1)</td>
<td>pp 1 to pp 23</td>
</tr>
<tr>
<td>04 01-OCT-03</td>
<td>Sprinkler System Types (Quiz 2)</td>
<td>pp 24 to pp 35</td>
</tr>
<tr>
<td></td>
<td>Design, Maint. and Testing (Quiz 3)</td>
<td>pp 35 to pp 57</td>
</tr>
<tr>
<td>06 15-OCT-03</td>
<td>Standpipe Systems (Quiz 4)</td>
<td>pp 73 to pp 87</td>
</tr>
<tr>
<td>07 22-OCT-03</td>
<td>MID TERM EXAMINATION</td>
<td></td>
</tr>
<tr>
<td>08 29-OCT-03</td>
<td>Fire Pumps and Sprinkler / Standpipe</td>
<td>pp 93 to pp 109</td>
</tr>
<tr>
<td></td>
<td>Fireground Operations (Quiz 5)</td>
<td>pp 58 to pp 63</td>
</tr>
<tr>
<td>09 05-NOV-03</td>
<td>Portable Fire Extinguishers</td>
<td>pp 115 to pp 153</td>
</tr>
<tr>
<td>10 12-NOV-03</td>
<td>Special Extinguishing Systems (Quiz 6)</td>
<td>pp 159 to pp 168</td>
</tr>
<tr>
<td>11 19-NOV-03</td>
<td>Foam Systems (Quiz 7)</td>
<td>pp 168 to pp 184</td>
</tr>
<tr>
<td>12 26-NOV-03</td>
<td>Pre-engineered Systems (Quiz 8)</td>
<td></td>
</tr>
<tr>
<td>13 03-DEC-03</td>
<td>Fire Detection Systems (Quiz 9)</td>
<td>pp 189 to pp 214</td>
</tr>
<tr>
<td>14 10-DEC-03</td>
<td>Fire Detection Systems (cont.)</td>
<td></td>
</tr>
<tr>
<td>15 17-DEC-03</td>
<td>Review for final exam (Quiz 10)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FINAL EXAMINATION.</td>
<td></td>
</tr>
</tbody>
</table>

The textbook for this class is:

This text is not required for the course.
TESTING:

QUIZZES:

There will be a total of nine quizzes given (classes 3, 4, 5, 6, 7, 10, 11, 12, 13 and 14). They will present brief questions on the material covered in the previous class. The quizzes will be given at the start of class. Missed quizzes cannot be made up.

I WILL TOTAL ALL OF YOUR QUIZZES AND DIVIDE THAT FIGURE BY EIGHT TO OBTAIN YOUR AVERAGE QUIZ SCORE. THE COMBINED QUIZ SCORES, WHEN AVERAGED, WILL ACCOUNT FOR 20% OF THE TOTAL GRADE.

MID-TERM AND FINAL EXAMINATIONS:

Both exams will cover material offered up to that date. The final exam will only include material covered after the mid-term exam. You must take the mid-term and final exams, failure to take either exam will result in failing the course. BOTH THE MID-TERM AND THE FINAL EXAMINATIONS WILL EACH ACCOUNT FOR 40% OF THE TOTAL GRADE.

CLASS PAPER:

A class paper is NOT required for this course. If extra credit work is desired you may submit a paper. The paper must conform to the following requirements:

The paper must be type-written. The paper shall be no less than 4 pages in length and no more than 6 pages in length. The subject matter of the paper shall outline a fire suppression or detection system problem that exists in the area your department covers and include your solutions for the problem. You are required to turn-in your topic for the paper no later than week number 6. The paper is due no later than week number 12.

THE CLASS PAPER CAN ADD NO MORE THAN 10 POINTS (10%) TO YOUR TOTAL GRADE.

BONUS QUESTIONS:

Bonus questions, when offered, will have a written worth assigned to them. Incorrect, incomplete answers and/or failure to answer a bonus question will not be held against the score of the exam being taken. Answering bonus questions can only improve your grade. Partial credit will be given when applicable.

EXAMINATION MAKE-UP, AND LATE PAPERS.

There will be no make-up of missed quizzes.

Make-up mid-term and final exams will normally have grade deductions of 20% applied. If you have a conflict with the schedule please make arrangements with me in advance and you will be able to avoid a grade deduction.

Late papers will have a 20% grade deduction applied for each week they are late.
ATTENDANCE & STUDENT RESPONSIBILITIES

The college allows no more than two unexcused absences per semester. I understand that work schedules and personal emergencies can conflict with your ability to attend. I will not fail anyone based upon their attendance record alone. Failure to attend at least seven of the quiz nights can have a negative impact on that portion of your grade.

Taking both the mid-term and final examinations are required to pass the course. Grades must be submitted to the college within a week of the end of the course. If you miss the final and do not or cannot take a make up exam within this time frame you will be given an incomplete for the course. IT IS YOUR RESPONSIBILITY TO CONTACT ME AND ARRANGE FOR A MAKE-UP EXAM. INCOMPLETE GRADES ARE AUTOMATICALLY CHANGED TO FAIL IF NOT UPDATED BY THE INSTRUCTOR PRIOR TO THE END OF THE NEXT SEMESTER.

We will be covering material in class that is not provided in the text. You will be responsible to know the material from the book even if it was not covered in class (unless I tell you otherwise) as well as the material covered in class.

When handouts are provided I normally have extras should you lose yours or miss a class.

If, during the semester, you experience difficulties in the class or a emergency arises please see me at the earliest possible time so that we can make appropriate arrangements.

Your returned quizzes provide an excellent study guide for the mid-term and the final exam. Be sure to see me if you want a copy of a quiz that you missed. I will provide one, with correct answers, if you request one.
The textbook for this class is:

IFSTA, Fire Department Company Officer, 3rd edition.
The IFSTA Study Guide for this book is strongly recommended.
There will be a total of twelve quizzes given (weeks 2, 3, 4, 5, 6, 9, 10, 11, 12, 13, and 14). They will contain short questions on the material covered in the previous class. The quizzes will be given at the start of class.

I WILL TOTAL YOUR QUIZ SCORES AND DIVIDE THAT FIGURE BY NINE TO OBTAIN YOUR AVERAGE QUIZ SCORE. THE COMBINED QUIZ SCORES, WHEN AVERAGED, WILL ACCOUNT FOR 20% OF THE TOTAL GRADE.

MID-TERM AND FINAL EXAMINATIONS:

Both exams cover material offered up to that date. The final exam will only include material covered after the mid-term exam.

BOTH THE MID-TERM AND THE FINAL EXAMINATIONS WILL EACH ACCOUNT FOR 30% OF THE TOTAL GRADE.

CLASS PAPER:

A class paper is required for this course. The paper must be type-written. The paper will be the narrative report of a Company officer who was in charge of an emergency call. The subject matter of the paper will be given out in week 3. The paper is due no later than week number 10 (APRIL 06, 2004). THE CLASS PAPER WILL ACCOUNT FOR 20% OF THE TOTAL GRADE.

BONUS QUESTIONS:

Bonus questions, when offered, will have a written worth assigned to them. Incorrect, incomplete answers and/or failure to answer a bonus question will not be held against the score of the exam being taken. Answering bonus questions can only improve your grade. Partial credit will be given when applicable.

EXAMINATION MAKE-UP, AND LATE PAPERS.

There will be no make-up of missed quizzes.

Make-up mid-term and final exams will normally have grade deductions of 20% applied. If you have a conflict with the schedule please make arrangements with me in advance and you will be able to avoid a grade deduction.

Late papers will have a 20% grade deduction applied for each week they are late.
ATTENDANCE & STUDENT RESPONSIBILITIES

The college allows no more than two unexcused absences per semester. I understand that work schedules and personal emergencies can conflict with your ability to attend. I will not fail anyone based upon their attendance record alone. Failure to attend at least nine of the quiz nights can have a negative impact on that portion of your grade.

Taking both the mid-term and final examinations are required to pass the course.

We will be covering material in class that is not provided in the text. You will be responsible to know the material from the book even if it was not covered in class (unless I tell you otherwise) as well as the material covered in class.

When handouts are provided I normally have extras should you lose yours or miss a class.

If, during the semester, you experience difficulties in the class or a emergency arises please see me at the earliest possible time so that we can make appropriate arrangements.

Grades need to be in within a short time after the Final Exam. If you miss the exam and I don't hear from you I will put in an "I" for incomplete. It is your responsibility to contact me to make up the Final Exam. Should you fail to do this before the completion of the next semester your grade will automatically be changed to a "F".

MAKE UP DAYS

Due to holidays falling during our scheduled class time the college schedules a make up day to provide students with the required contact hours. We can make arrangements to make up this time in another manner if we so desire. The important factor is to properly and completely cover the materials scheduled for those evenings. We will discuss the specific days and our plans during night one and formulate a plan. If we do not reach a consensus we will follow the college schedule.
CAPE COD COMMUNITY COLLEGE - FIRE SCIENCE PROGRAM

SEMESTER

SHIPBOARD FIREFIGHTING - COURSE OUTLINE

HF130-63, Thursday Evenings. 6:30 to 9:30 pm.

MR. DEAN L. MELANSON, HOME; 771-1358, WORK; 775-1301, CELL; 508-648-5802

WEEK # | TOPIC | READING(S)
-------|-------|-----------
1 | Introduction, Maritime Environment | (Pages: 1 to 6)
   | | (Pages: 9 to 27)
2 | Maritime Organizational Roles (Quiz 1) | (Pages: 31 to 47)
3 | Vessel Types (Quiz 2) | (Pages: 53 to 112)
4 | Detection & Suppression Systems (Quiz 3) | (Pages: 117 to 146)
5 | Plans, and Documentation (Quiz 4) | (Pages: 149 to 167)
6 | Ship Tour (Monday) | (Quiz 5) (Pages: 171 to 183)
7 | Cargo | (Quiz 5) (Pages: 171 to 183)
8 | MID-TERM EXAMINATION. | (Pages: 187 to 208)
9 | Hazards & Safety (Quiz 6) | (Pages: 213 to 230)
10 | Stability | Handout
11 | Pre Incident Planning & Training (Quiz 7) | (Pages: 233 to 282)
12 | Incident Management & Safety Damage Control Dewatering (Quiz 8) | (Pages: 233 to 282)
13 | Incident Management, in open water, in port, aground. (Quiz 9) | (Pages: 233 to 282)
14 | Ships Company Firefighting Ops. (Quiz 10) | Classroom
15 | FINAL EXAMINATION. | Classroom

The textbook for this class is:
Reference Text:

U.S. D.O.T. Marine Fire Prevention, Firefighting, and Safety
U.S.N. Damage Controlman
U.S.N. Surface Ship Firefighting
TESTING:

QUIZZES:

There will be a total of nine quizzes given (weeks 2, 3, 4, 5, 6, 9, 10, 12, and 13). They will contain short questions on the material covered in the previous class. The quizzes will be given at the start of class. Missed quizzes will not be made up.

I will total your quiz scores and divide that figure by nine to obtain your average quiz score. The combined quiz scores, when averaged, will account for 20% of the total grade.

MID-TERM AND FINAL EXAMINATIONS:

Both exams cover material offered up to that date. The final exam will only include material covered after the mid-term exam.

Both the mid-term and the final examinations will each account for 40% of the total grade.

CLASS PAPER:

A class paper is NOT required for this course. If extra credit work is desired you may submit a paper. The paper must conform to the following requirements:

The paper must be type-written. The paper shall be no less than 4 pages in length and no more than 6 pages in length. The subject matter of the paper shall be on a maritime topic that I approve. You are required to turn-in your topic for the paper no later than week number 6. The paper is due no later than week number 12.

The class paper can add no more than 10 points (10%) to your total grade.

BONUS QUESTIONS:

Bonus questions, when offered, will have a written worth assigned to them. Incorrect, incomplete answers and/or failure to answer a bonus question will not be held against the score of the exam being taken. Answering bonus questions can only improve your grade. Partial credit will be given when applicable.

EXAMINATION MAKE-UP AND LATE PAPERS.

There will be no make-up of missed quizzes.

Make-up mid-term and final exams will normally have grade deductions of 20% applied. If you have a conflict with the schedule please make arrangements with me in advance, and you will be able to avoid a grade deduction. Late papers will have a 20% grade deduction applied for each week they are late.

SHIP TOUR:

A tour of a local ship will be provided, if possible, during the semester. This tour will "ideally" occur later in the semester with the purpose of "bringing together" the information learned. It is also intended to assist you in understanding the difficulties involved in attempting to fight a fire on board a ship. There may be specific equipment, such as a flashlight, that each student must bring. We will discuss this as early as possible in the semester to allow you to plan appropriately. Due to Ship schedules etc., the tour date may have to be changed. I will give you as much notice as is possible, and we will adjust the course schedule accordingly.
ATTENDANCE & STUDENT RESPONSIBILITIES

The college allows no more than two unexcused absences per semester. I understand that work schedules and personal emergencies can conflict with your ability to attend. I will not fail anyone based upon their attendance record alone. Failure to attend at least nine of the quiz nights can have a negative impact on that portion of your grade.

Taking both the mid-term and final examinations are required to pass the course.

We will be covering material in class that is not provided in the text. You will be responsible to know the material from the book even if it was not covered in class (unless I tell you otherwise) as well as the material covered in class.

When handouts are provided I normally have extras should you lose yours or miss a class.

If, during the semester, you experience difficulties in the class or an emergency arises please see me at the earliest possible time so that we can make appropriate arrangements.

Grades need to be in within a short time after the Final Exam. If you miss the exam and I don’t hear from you, I will put in an “I” for incomplete. It is your responsibility to contact me to make up the Final Exam. Should you fail to do this before the completion of the next semester your grade will automatically be changed to a “F”.

MAKE UP DAYS

Due to holidays falling during our scheduled class time the college schedules a make up day to provide students with the required contact hours. We can make arrangements to make up this time in another manner if we so desire. The important factor is to properly and completely cover the materials scheduled for those evenings. We will discuss the specific days and our plans during night one and formulate a plan. If we do not reach a consensus we will follow the college schedule.
JOURNALS RELATING TO FIRE SCIENCE in PRINT AND DIGITALLY AVAILABLE.

Fire (Tunbridge Wells) (0142-2510) from 01/01/2002 to present in General Business File ASAP.

Fire chief (0015-2552) from 01/01/2003 to present in Business Source Premier.

Fire engineering (0015-2587) in Wilkens Library individual holdings and from 01/01/1995 to present in Academic Search Premier.

Fire international (0015-2609) from 09/01/2001 to 10/01/2002 in General Business File ASAP.

Fire journal (Boston, Mass.) (0015-2617) in Wilkens Library individual holdings.

Fire News (0015-2625) in Wilkens Library individual holdings.

Fire safety engineering (1352-2280) from 05/01/2002 to present in Business Source Premier and General Business File ASAP.

International fire & security product news (0961-3730) from 02/01/2003 to 10/01/2004 in Business Source Premier from 04/01/2002 to present in General Business File ASAP.

HAZARDOUS MATERIAL & SAFETY

Hazardous waste consultant (0738-0232) from 01/01/1999 to present in Business Source Premier from 02/01/2002 to present in Expanded Academic ASAP and General Business File ASAP.


Hazardous Waste Superfund Report from 08/09/2004 to present in Expanded Academic ASAP.

Hazardous waste/superfund week (1536-0946) from 01/01/2001 to 07/19/2004 in Expanded Academic ASAP.

Journal of environmental science and health. Part A, Toxic/hazardous substances & environmental engineering (1093-4529) from 01/01/2001 to 1 year ago in Academic Search Premier.
Toxic substance mechanisms (1076-9188) from 01/01/1995 to 10/01/2000 in Academic Search Premier and Health Source: Nursing/Academic Edition

Occupational hazards (0029-7909) from 01/01/1999 to present in General Business File ASAP, Health Reference Center Academic and Professional Collection from 01/01/2000 to present in Business Source Premier

Biomedical safety & standards (1080-9775) from 01/15/1999 to present in Academic Search Premier from 01/15/2002 to present in Expanded Academic ASAP, General Business File ASAP and Health Reference Center Academic

Injury control and safety promotion (1566-0974) from 03/01/2000 to 1 year ago in Academic Search Premier and Health Source: Nursing/Academic Edition

Professional safety (0099-0027) from 07/01/1997 to present in Academic Search Premier and Business Source Premier

Safety now (1078-0114) from 02/01/2002 to present in General Business File ASAP

BUILDING CONSTRUCTION

Building design & construction (0007-3407) from 01/01/1989 to present in Expanded Academic ASAP and General Business File ASAP from 07/01/1999 to present in Business Source Premier

Construction (Arlington) (0010-6704) from 07/09/2001 to present in Business Source Premier from 08/09/2004 to present in General Business File ASAP

Construction & building materials (0950-0618) from 04/01/1999 to present in General Business File ASAP

Construction law and business (1526-159X) from 03/01/2001 to 03/01/2002 in Business Source Premier

Electrical construction and maintenance (0013-4260) from 01/01/1994 to present in General Business File ASAP from 01/01/1997 to present in Business Source Premier

PUBLIC ADMINISTRATION

American review of public administration (0275-0740) from 03/01/1989 to 12/01/1998 in Expanded Academic ASAP and General Business File ASAP
Australian journal of public administration (0313-6647) from 03/01/1994 to 1 year ago in Business Source Premier

Canadian public administration (0008-4840) from 09/22/2003 to 14 days ago in Expanded Academic ASAP

International journal of public administration (0190-0692) from 01/01/2001 to 1 year ago in Business Source Premier

Internet Law - Business - Public Administration from 05/01/2005 to present in General Business File ASAP

Journal of public administration research and theory (1053-1858) from 01/01/1994 to 10/01/2002 in Business Source Premier from 01/01/1997 to present in Expanded Academic ASAP

Public administration (London) (0033-3298) from 03/01/1965 to 1 year ago in Business Source Premier

Public administration quarterly (0734-9149) from 03/01/1983 to present in Business Source Premier

Public administration review (0033-3352) from 03/01/1965 to present in Business Source Premier from 03/01/1994 to 07/01/2002 in Expanded Academic ASAP and General Business File ASAP from 05/01/1991 to 07/02/2004 in Professional Collection

Southern review of public administration (0147-8168) from 06/01/1977 to 01/01/1983 in Business Source Premier
Books supporting Fire Science in the Wilkens Library

REF TH9111.N375a National fire codes.
T55.3.H3 A45 1986 Handling and management of hazardous materials and wastes / Thedore H. Allegri.
T55.3.H3 A45 1986 Handling and management of hazardous materials and wastes / Thedore H. Allegri.
T55.3.H3 E53x 1997 Emergency response and hazardous chemical management : principles and practices
T55.3.H3 H377 2002 Hazardous materials air monitoring and detection devices / Chris Hawley.
T55.3.H3 N56 1990 NIOSH pocket guide to chemical hazards.
T55.3.H3 S83 1996 Substitutes for hazardous chemicals in the workplace / Per Filskov ... [et al.].
TA1015.F5  Man on the move; the story of transportation, by Harvey S. Firestone, Jr.
TA166.M8 Engineering manual; a practical reference of data and methods in architectural, chemical, civil,etc
TA168.G3 Engineering and society: opportunities for change; proceedings.
TA168.G413 Engineering.
TA352.B34 Applications of undergraduate mathematics in engineering, written and edited by Ben Noble.
TA357.F69 Introductory engineering statistics / Irwin Guttman, the late S.S. Wilks, J. Stuart Hunter.
Books supporting Fire Science in the Wilkens Library

TA455.P55 R58 1997
Wood as raw material; source, structure, chemical composition, growth, degradation, & identification.

Designing with reinforced composites: technology, performance, economics / Dominick V. Rosato.

TA595 .5 V36 1996
Designing with reinforced composites: technology, performance, economics / Dominick V. Rosato

TC343 .W313
Fire service hydraulics. Edited by James F. Casey.

TC423 .G64
Fire department hydraulics / Eugene F. Mahoney.

TF149 .M53

TF149 .P64 1962
World of waste: dilemmas of industrial development / K.A. Gourlay.

TF23 .A44
Hazardous waste management in Massachusetts: statewide environmental impact report Disposal.

TF355 .A51 1960
The Facts on File dictionary of environmental science / Bruce Wyman, L. Harold Stevenson.

TH153 .L29 1999

TH153 .P648
Blue book building and construction (Eastern Massachusetts, Rhode Island, S. New Hampshire ed

TH1715 .C615
Methods and materials of commercial construction, by Frank R. Dagostino.

TH1725 .E86 2002
Building construction: materials and types of construction / Donald C. Ellison

TH2274 .N28 1973
Concrete block construction [by] Robert Putnam, with collaboration of John Burnett.

TH23 .C58
Architectural record; "Time-saver standards a manual of essential architectural data

TH375 .H47 1988
Building construction handbook.

TH443 .L48 1987
The Complete book of insulating / editor, Larry Gay; authors, Roger Albright ... [et al.]

TH4811 .W348
Code for safety to life from fire in buildings and structures.

TH4817 .T73 1974
American building: materials and techniques from the first colonial settlements to the present.

TH4818 .W6 B55 1974
Construction site planning and development / Charles A. Herubin.

TH5313 .D39
Why buildings fall down: how structures fail / Matthias Levy and Mario Salvadori

TH5607 .M33 1987
Construction safety management / Raymond Elliot Levitt, Nancy Morse Samelson.

TH7425 .S44
How buildings work: the natural order of architecture / Edward Allen

TH9151 .H8
Handbook of industrial loss prevention; recommended practices for the protection of property I

TH9151 .H8 NO.102
Elevating platforms and water towers. by Paul R. Lyons.

TH9151 .H8 NO.103
Measuring fire protection productivity in local government: some initial thoughts

TH9151 .H8 NO.104

TH9151 .H8 NO.105
Managing fire services / editors, John L. Bryan, Raymond C. Picard.

TH9151 .H8 NO.106
Opportunities in fire protection / Ronny J. Coleman.

TH9151 .H8 NO.108
Fire protection handbook / Gordon P. McKinnon, editor; Keith Tower, assistant editor.

TH9151 .H8 No.109
Source material reference guide / compiled by Claudette S. Hagle and Connie Williams

TH9151 .H8 NO.110
Fire service ground ladder practices. Edited by Everett Hudiburg and Charles E. Thomas.

TH9151 .H8 No.201
Fire hose practices.

TH9151 .H8 NO.203
Salvage and overhaul practices / edited by Everett Hudiburg and Carl E. McCoy.

TH9151 .H8 No.205
Fire stream practices / edited by Everett Hudiburg;

TH9151 .H8 No.206
Fire apparatus practices / International Fire Service Training Association ; edited Everett Hudiburg.

TH9151 .H8 No.207
Fire service rescue and protective breathing practices / edited by Everett Hudiburg;
Books supporting Fire Science in the Wilkens Library

<table>
<thead>
<tr>
<th>Call Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH9151 .H8 NO.301</td>
<td>Fire service first aid practices / edited by Everett Hudiburg and Carl E. McCoy.</td>
</tr>
<tr>
<td>TH9151 .H8 NO.302</td>
<td>Fire prevention and inspection practices / edited by Everett Hudiburg, Charles E. Thomas;</td>
</tr>
<tr>
<td>TH9151 .H8 NO.303</td>
<td>Fire service practices for volunteer fire departments. 5th ed.</td>
</tr>
<tr>
<td>TH9151 .H8 NO.401</td>
<td>Fire service training programs / edited by Everett Hudiburg;</td>
</tr>
<tr>
<td>TH9151 .H8 NO.402</td>
<td>Water supplies for fire protection. Edited by Everett Hudiburg.</td>
</tr>
<tr>
<td>TH9151 .H8 NO.403</td>
<td>Aircraft fire protection and rescue procedures. Edited by Everett Hudiburg and Carl E. McCoy.</td>
</tr>
<tr>
<td>TH9151 .W224</td>
<td>Ground cover fire fighting practices. / Edited by Everett Hudiburg, Charles E. Thomas.</td>
</tr>
<tr>
<td>TH9155 .N276</td>
<td>The fire department officer / compiled by a committee of the International Fire Service Training Assn</td>
</tr>
<tr>
<td>TH9157 .M28 1968</td>
<td>Fire department facilities, planning, and procedures.</td>
</tr>
<tr>
<td>TH9176 .N48</td>
<td>Fire service instructor training. Edited by Everett Hudiburg.</td>
</tr>
<tr>
<td>TH9180 .B336</td>
<td>Fundamental principles of mathematics applied to the fire service / compiled by Everett Hudiburg.</td>
</tr>
<tr>
<td>TH9180 .C37</td>
<td>Fundamental principles of science applied to the fire service.</td>
</tr>
<tr>
<td>TH9180 .K5</td>
<td>Leadership in the fire service / Edited by Everett Hudiburg.</td>
</tr>
<tr>
<td>TH9245 .N277 De</td>
<td>Modern guidelines for fire control, by Charles V. Walsh.</td>
</tr>
<tr>
<td>TH9245 .N277 HO</td>
<td>Successful public relations, the what, why, who, how, where, when : a guide for fire departments</td>
</tr>
<tr>
<td>TH9271 .K48</td>
<td>Fire administration and technology; the complete study guide for scoring high.</td>
</tr>
<tr>
<td>TH9310 .K49</td>
<td>Arson; a handbook of detection and investigation, by Brendan P. Battle and Paul B. Weston.</td>
</tr>
<tr>
<td>TH9310.5 .C55</td>
<td>Physical and technical aspects of fire and arson investigation / by John R. Carroll.</td>
</tr>
<tr>
<td>TH9311 .W3</td>
<td>Fire protection by Halons : a compilation of articles from Fire Journal and Fire Technology.</td>
</tr>
<tr>
<td>TH9336 .T5</td>
<td>How to use statistics / by John Ottoson.</td>
</tr>
<tr>
<td>TH9360 .E7 1974</td>
<td>Fire attack-2 planning, assigning, operating.</td>
</tr>
<tr>
<td>TH9360 .N277 Te</td>
<td>Fire service communications for fire attack, by Warren Y. Kimball.</td>
</tr>
<tr>
<td>TH9446 .C5 B15</td>
<td>The extinguishment of fire, by Walter M. Haessler.</td>
</tr>
<tr>
<td>TH9446 .C5 B15</td>
<td>Fire officer's guide to dangerous chemicals / by Charles W. Bahme.</td>
</tr>
<tr>
<td>TH9446 .C5 B15</td>
<td>Fire officer's guide to dangerous chemicals / by Charles W. Bahme.</td>
</tr>
<tr>
<td>TH9446 .C5 B15</td>
<td>Municipal fire administration.</td>
</tr>
<tr>
<td>TH9446 .C5 B15</td>
<td>Municipal fire administration.</td>
</tr>
<tr>
<td>TH9503 .A104 G77</td>
<td>Fire company apparatus and procedures [by] Lawrence W. Erven.</td>
</tr>
<tr>
<td>TH9503 .A104 G77</td>
<td>Chemistry of hazardous materials / Eugene Meyer.</td>
</tr>
<tr>
<td>TH9503 .I6 1968</td>
<td>Telecommunications systems : principles and practices for rural and forestry fire services /</td>
</tr>
</tbody>
</table>