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WEST POINT ENGINEERING GRADUATES SURVEY

Electrical Engineering



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***Office of the Dean
United States Military Academy
West Point New York 10996***

WEST POINT ENGINEERING GRADUATES SURVEY

Electrical Engineering

INSTRUCTIONS

Please complete each question by circling the letter that corresponds to your answer for each multiple-choice question in the booklet. All questions should be answered, except where indicated otherwise.

Free-response questions also are included. They should be answered directly in the questionnaire booklet in the spaces indicated. Should you need more room for your responses, attach additional pages.

Do not enter your name, SSN, or other identifying information in the questionnaire booklet. Results will be reported as group data only. Your responses will remain completely anonymous.

Your participation is important for the validity of the results. Failure to respond will result in no penalty to you; however, full participation is encouraged so that the data will be complete and representative.

When you have finished, **tear off** the front cover and instructions page of the questionnaire booklet (to reduce bulk and save postage), **fold** the remaining booklet along the lines indicated on the back cover, and **seal** it in the pre-addressed envelope provided.

Mail your responses directly to Institutional Research, United States Military Academy, Official Mail & Distribution Center, 646 Swift Road, West Point NY 10996-9901, as shown on the envelope.

We request that you complete and return your questionnaire within 30 days of receipt. If you are unable to meet this suspense, please complete and **return it as soon as possible**.

Point of Contact for this survey is Ms. Janet T. Wolff, Institutional Research & Analysis, DSN 688-7384/2803 or (845) 938-7384/2803; e-mail: janet.wolff@usma.edu.

ELECTRICAL ENGINEERING GRADUATES SURVEY

PART I

Questions 1-6 ask you to rate various components of your engineering education at West Point. In responding to these questions, use the scale below to rate how well your engineering education at West Point prepared you in the following areas.

- A. Excellent
- B. Very Good
- C. Good
- D. Fair
- E. Poor

| <u>Desired Outcome</u> | <u>Rating</u> |
|--|---------------|
| 1. Develop your problem-solving abilities? | A B C D E |
| 2. Establish a sound foundation in engineering design methodology? | A B C D E |
| 3. Understand battlefield systems and operations? | A B C D E |
| 4. Understand current Army technology and emerging technologies? | A B C D E |
| 5. Prepare you for the engineering or engineering-related jobs you (have) held in the Army? | A B C D E |
| 6. Prepare you for your continuing education? | A B C D E |
| 7. Have you taken the Fundamentals of Engineering (FE) Examination (formerly the EIT)? | |
| A. Yes, passed on first attempt. | |
| B. Yes, passed, but not on first attempt. | |
| C. Yes, but have not yet passed. | |
| D. Yes, awaiting results. | |
| E. No – Skip to Question 12. | |
| 8. To what extent was your <u>engineering education</u> at West Point effective in preparing you for the FE Examination? | |
| A. Very great extent | |
| B. Great extent | |
| C. Moderate extent | |
| D. Slight extent | |
| E. Not at all | |

9. Have you taken the Professional Engineering (PE) Examination?

- A. Yes, passed on first attempt.
- B. Yes, passed, but not on first attempt.
- C. Yes, but have not yet passed – **Skip to Question 11.**
- D. Yes, awaiting results – **Skip to Question 11.**
- E. No – **Skip to Question 12.**

10. In which engineering field are you officially registered? (**Mark all that apply.**)

- A. No specified discipline
- B. Civil Engineering
- C. Electrical Engineering
- D. Industrial Engineering
- E. Mechanical Engineering
- F. Environmental Engineering
- G. Chemical Engineering
- H. Nuclear Engineering
- I. Other

11. To what extent was your engineering education at West Point effective in preparing you for the PE?

- A. Very great extent
- B. Great extent
- C. Moderate extent
- D. Slight extent
- E. Not at all

Questions 12-26 ask you about your experiences since your West Point graduation.

12. Which engineering category most nearly describes the majority of the engineering or engineering-related duties in your Army assignments?

- A. Not applicable; no engineering or engineering-related jobs
- B. Civil
- C. Electrical
- D. Environmental
- E. Mechanical
- F. Systems
- G. Engineering Management

For Questions 13-16, use the scale below.

- A. Strongly agree
- B. Agree
- C. Neither agree nor disagree
- D. Disagree
- E. Strongly disagree

I am confident in my ability to ...

- | | | | | | |
|--|---|---|---|---|---|
| 13. learn on my own – to identify what I know and don't know about a given problem and find answers to unresolved questions. | A | B | C | D | E |
| 14. learn new aspects of my position on the job. | A | B | C | D | E |
| 15. continue professional development through self-directed study. | A | B | C | D | E |
| 16. undertake advanced graduate study. | A | B | C | D | E |

Indicate which of the following engineering or engineering-related continuing education activities (Q17-23) you have completed?

| Activity | Yes | No |
|---|-----|----|
| 17. Ph.D. in Engineering | A | B |
| 18. Ph.D. in engineering-related field | A | B |
| 19. MS/ME in Engineering | A | B |
| 20. MS in engineering-related field | A | B |
| 21. Courses leading to a graduate degree not yet obtained | A | B |
| 22. Courses not leading to a degree | A | B |
| 23. Non-credit courses taken through professional societies, universities, employers, or the Army | A | B |

24. Please provide the following information for any non-engineering oriented graduate or professional degrees you have begun or completed:

| Degree | Major | Institution | Completed (Yes/No) |
|--------|-------|-------------|--------------------|
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ |

25. Are you a member of a military technical society (SAME, AFCEA, MORS, etc.)?

- A. No, never held membership.
- B. No, not now; was a member.
- C. Yes, but not a very active participant in society activities.
- D. Yes, and a very active participant in society activities.

26. Are you a member of one or more professional engineering societies (e.g., ASCE, ASME, IEEE, ACM, etc.)?

- A. No, never held membership.
- B. No, not now; was a member.
- C. Yes, but not a very active participant in society activities.
- D. Yes, and a very active participant in society activities.

27. Are you currently serving on active duty?

- A. Yes – **Skip to Part II, Question 32**
- B. No – **Continue with Question 28**

28. Which of the following describes your professional status as a civilian? (**Mark all that apply.**)

- A. Engineer
- B. Scientist
- C. Educator
- D. Sales/Marketing
- E. Manager/Executive
- F. Entrepreneur
- G. Elected/appointed official
- H. Other professional
- I. Other (unemployed, full/part-time non-professional employee, full/part-time student, etc.)

29. Which engineering category most nearly describes the majority of the engineering or engineering-related duties in your civilian assignments?
- A. Not applicable; no engineering or engineering-related tasks
 - B. Civil
 - C. Electrical
 - D. Environmental
 - E. Mechanical
 - F. Systems
 - G. Engineering Management
30. Since leaving active service, in which sector of the economy have you worked professionally most of the time?
- A. Business/Industry
 - B. Government
 - C. Education
 - D. Other
 - E. Not applicable (e.g., unemployed, full or part-time non-professional employee, full-time student, etc.)
31. To what extent was your engineering education at West Point effective in preparing you for the engineering or engineering-related tasks you have performed since leaving the Army?
- A. Very great extent
 - B. Great extent
 - C. Moderate extent
 - D. Slight extent
 - E. Not at all
 - F. Not applicable; no engineering or engineering-related tasks

Go to next page.

PART II – PROGRAM SPECIFIC

Below you will find the objectives of the Electrical Engineering Program as currently stated in the USMA Catalog and the Academic Program. While the objectives listed may not be identical to those in place when you graduated, the program remains fundamentally similar. The questions following each objective assess how important you consider each to be – for yourself, your career, and the Army – and how well USMA accomplished that objective in your education.

Objective – Graduates work as members of *multidisciplinary teams*, effectively leading others, managing projects, and leveraging technology to solve problems for the Army and the nation.

32. How experienced are you in applying engineering problem solving skills to situations in your unit or organization?
- A. Extremely experienced
 - B. Very experienced
 - C. Experienced
 - D. Somewhat experienced
 - E. Inexperienced
33. What roles have you played as part of a team responsible for solving a technical problem or completing a project? **(Mark all that apply.)**
- A. Team leader/manager
 - B. Technical expert
 - C. Team member (non-technical)
 - D. Team member (technical)
 - E. Other (specify) _____
34. How important is the ability to work with members of other branches, disciplines, and professions, in the solution of problems you encounter?
- A. Extremely important
 - B. Very important
 - C. Important
 - D. Somewhat important
 - E. Not important

Go to next page.

Objective – Graduates effectively employ electrical and electronic systems in the Army and lead the exploration of new applications, techniques and doctrine for their use.

How important to the following are an understanding electrical engineering fundamentals (Q35-37)? Use the scale below.

- A. Extremely important
- B. Very important
- C. Important
- D. Somewhat important
- E. Not important

- 35. Solution of Army technical problems A B C D E
- 36. Your success in the Army A B C D E
- 37. Your future success A B C D E

How confident are you in your ability to apply introductory skills and/or specialized skills from the following (Q38-40)?

- A. Extremely confident
- B. Very confident
- C. Confident
- D. Somewhat confident
- E. Not confident

- 38. Applying introductory skills to Army problems A B C D E
- 39. Applying specialized skills to Army problems in area of specialty A B C D E
- 40. Applying specialized skills to Army problems in areas other than your specialty A B C D E

41. Choose one electrical engineering sub-discipline where you have the most expertise and/or knowledge based on your West Point experience.

- A. Communication Systems
- B. Computer Systems Architecture
- C. Electronics
- D. Photonics
- E. Other (specify) _____

42. What do you consider to be your current area of expertise within electrical engineering?

Specify: _____

Objective – Graduates apply disciplinary knowledge and skills to identify and formulate solutions to problems which can be solved through the application of electrical engineering theory, tools, and techniques.

How important for continued development of skills in specialized areas of electrical engineering are the following (Q43-45)? Use the scale below.

- A. Extremely important
- B. Very important
- C. Important
- D. Somewhat important
- E. Not important

43. Knowledge of mathematics fundamentals¹

A B C D E

44. Knowledge of science fundamentals²

A B C D E

45. Knowledge of technology fundamentals³

A B C D E

How confident are you in your ability to continue the development of your skills in specialized areas of electrical engineering based on your knowledge of the following (Q46-48)?

- A. Extremely confident
- B. Very confident
- C. Confident
- D. Somewhat confident
- E. Not confident

46. Mathematics fundamentals

A B C D E

47. Science fundamentals

A B C D E

48. Technology fundamentals

A B C D E

¹ Integral/differential calculus, probability and statistics, differential equations, etc.

² Physics, chemistry, etc.

³ Information technology, computing, etc.

Objective – Graduates demonstrate the background for professional practice, graduate study, and service to the Army within the context of the electrical engineering discipline.

How important is an appropriate electrical engineering background for the following (Q49-52)?

- A. Extremely important
- B. Very important
- C. Important
- D. Somewhat important
- E. Not important

- | | | | | | |
|--|---|---|---|---|---|
| 49. Professional practice in electrical engineering | A | B | C | D | E |
| 50. Solution of Army electrical engineering problems | A | B | C | D | E |
| 51. Success in your Army career | A | B | C | D | E |
| 52. Success in your career <u>beyond</u> the Army | A | B | C | D | E |

How confident are you in your ability to apply electrical engineering skills to the following (Q53-55)?

- A. Extremely confident
- B. Very confident
- C. Confident
- D. Somewhat confident
- E. Not confident

- | | | | | | |
|--|---|---|---|---|---|
| 53. Pursuing professional practice in electrical engineering | A | B | C | D | E |
| 54. Completing graduate study in electrical engineering | A | B | C | D | E |
| 55. Providing service to the Army in electrical engineering | A | B | C | D | E |

Go to next page.

Objective – Graduates apply an engineering methodology and creativity to problem solving, communicate concepts effectively, and integrate computer and information technologies as multipliers for human intellectual ability and military applications.

How important to electrical engineers are the following (Q56-58)?

- A. Extremely important
- B. Very important
- C. Important
- D. Somewhat important
- E. Not important

- | | | | | | |
|--|---|---|---|---|---|
| 56. Creativity in developing solutions to problems | A | B | C | D | E |
| 57. Communicating ideas, concepts, and solutions to problems | A | B | C | D | E |
| 58. Integrating information and computer technologies in problem-solving | A | B | C | D | E |

How confident are you in your ability to accomplish the following (Q59-61):

- A. Extremely confident
- B. Very confident
- C. Confident
- D. Somewhat confident
- E. Not confident

- | | | | | | |
|--|---|---|---|---|---|
| 59. Applying creativity in problem-solving | A | B | C | D | E |
| 60. Communicating ideas, concepts and solutions to problems | A | B | C | D | E |
| 61. Integrating information and computer technologies in problem-solving | A | B | C | D | E |

Go to next page.

Objective – Graduates demonstrate the skills and confidence to grow intellectually and professionally in electrical engineering through self-study, continuing education, and other means, including being prepared to pursue any area of the discipline in depth as desired or required by the Army.

How important to electrical engineers are the following experiences (Q62-71)?

- | | |
|---|------------------------|
| | A. Extremely important |
| | B. Very important |
| | C. Important |
| | D. Somewhat important |
| | E. Not important |
| 62. Full-time graduate study in electrical engineering leading to a degree | A B C D E |
| 63. Part-time graduate study in any discipline (e.g., evenings) | A B C D E |
| 64. Professional reading in electrical engineering (e.g., engineering publications) | A B C D E |
| 65. Professional reading in engineering, in general | A B C D E |
| 66. Professional reading, in general | A B C D E |
| 67. Engineering short courses (weekend or a week) | A B C D E |
| 68. Attendance at professional conferences (technical) | A B C D E |
| 69. Participation in professional society activities (e.g., meetings, technical presentations, trips, etc.) | A B C D E |
| 70. Attendance at Army officer schools (e.g., advanced course, CGSC, War College, etc) | A B C D E |
| 71. Attendance at Army technical schools or seminars | A B C D E |
| 72. Do the objectives listed on pages 6-11 accurately reflect what graduates can do at the 5 year point in their careers? | 7 |
| A. Strongly agree | |
| B. Agree | |
| C. Neutral | |
| D. Disagree | |
| E. Strongly disagree | |

Thank you for taking the time to give us your honest feedback. It is one of the most important sources of information we have in maintaining and improving the quality of the Electrical Engineering Program at USMA.

Our graduates are our most important product. We are proud of the things you do for the Army and the nation.

PART III

ADDITIONAL COMMENTS

If USMA administered surveys **only** via the Internet, how would this influence your participation?

| | <u>Yes</u> | <u>No</u> |
|---|------------|-----------|
| I would be able to respond to surveys on the Internet | A | B |
| I would be willing to respond to surveys on the Internet | A | B |

Do you have any other comments or suggestions about your engineering education at West Point?
(Use typewriter or word processor on separate sheet(s), if preferred)