Program Assessment: "One Question"
Department of Physics

As part of our program assessment the Department decided to focus its "One Question" effort on surveying our alumni concerning their satisfaction with the preparation received while at TCNJ as well as strive to measure the success of our graduates. The Learning goal/outcome measured states: "Achieve professional growth in their field." The question that is the overarching theme of our survey is: "Are we preparing students so they can grow professionally after graduating?" A copy of the survey is included as an appendix (Appendix II) to this report on page 18.

During the month of March 2006 the questionnaire was mailed and e-mailed to physics alumni who graduated between May 1991 and May 2005. A total of 59, of the about 100 alumni that graduated in that time period, responded to the survey. We estimate that because some of the contact information was out-of-date or incomplete we had an actual response rate of about 80%. The vast majority (85%) of our respondents completed the survey online, while the remaining graduates submitted a paper version by mail.

The questionnaire included requests for input on what they considered the most valuable features of their physics education as well as suggestions for improving our program. This feedback and other comments are included in Appendix I on page 7. Many comments refer to the rapport with and positive qualities, such as teaching excellence, knowledge, accessibility, and helpfulness, of faculty members in the Department of Physics. The relatively small size of the department was frequently mentioned as a very positive aspect of their experience at TCNJ.

Considering that our sample is relatively small we have not broken the data shown below by year of graduation or track. Some of the comments addressing writing and communication skills as well as research internships have been addressed in the past few years and merit no action. Other feedback and comments allows us to conclude that we do need to carefully review our program and formulate some changes.

In the next academic year the Department will study the feasibility and benefits of the following:

1. Implementation of an accelerated General Physics I and II. Physics and other qualified science majors would be allowed into this class that would cover more topics and have more extracurricular activities than the regular current offerings.
2. Compare the textbooks our faculty members use, for the upper level physics courses, with the books used by other high quality undergraduate programs as well as the 'standard' textbooks expected by graduate institutions. Examine adopting new textbooks where warranted.
3. Alternatives to the computer programming experiences that most of our majors require but is not very effective or useful for our teaching graduates. For example, teaching track majors attending upper level physics courses could focus on designing and implementing experiments that require computer interfacing.

4. Continue supporting applications of our majors to Research Experiences for Undergraduates (REU) at various institutions as well as at TCNJ. Implement support for internships in the private sector, starting with companies where alumni currently hold positions.

This report will document that over 75% of our alumni were either very or extremely satisfied with their overall preparation to practice professionally within their discipline as well as succeed in subsequent graduate or professional education. Seventy six percent of our graduates perceived their educational preparation was much higher or higher than average graduates from other schools. Over 90% of the alumni would recommend the TCNJ physics education to friends or relatives. Appendix I has information not easily tabulated but very instructive. The sections include information of aspects of their education experience that have been useful in their careers, recommended improvements to our program, most valuable aspects of their TCNJ experience, general comments, data on current employment, and degrees sought as well as the institutions attended for graduate studies.

Figure 1. Respondents by Tracks

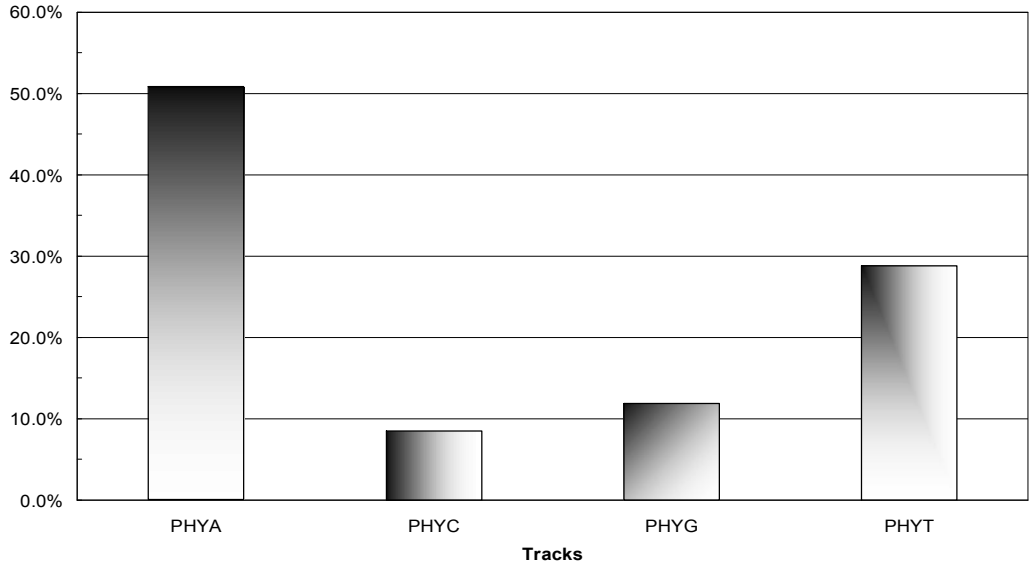


Figure 1 shows the distribution of respondents by the physics track they followed while at TCNJ. PHYA corresponds to the Liberal Arts track, PHYC to Computational Physics, PHYG to Earth Science, and PHYT to the Teaching track. In the time period surveyed, 1991 to 2005 about 48% of the graduates have been PHYA, 29% PHYT, 10% PHYC, and 13% PHYG. Thus, the respondents' distribution closely resembles that of our overall alumni.

Figure 2a. TCNJ Program Effectiveness for Career

(1:not very import. 2:somewhat import. 3:important 4:very import. 5:extremely import.)

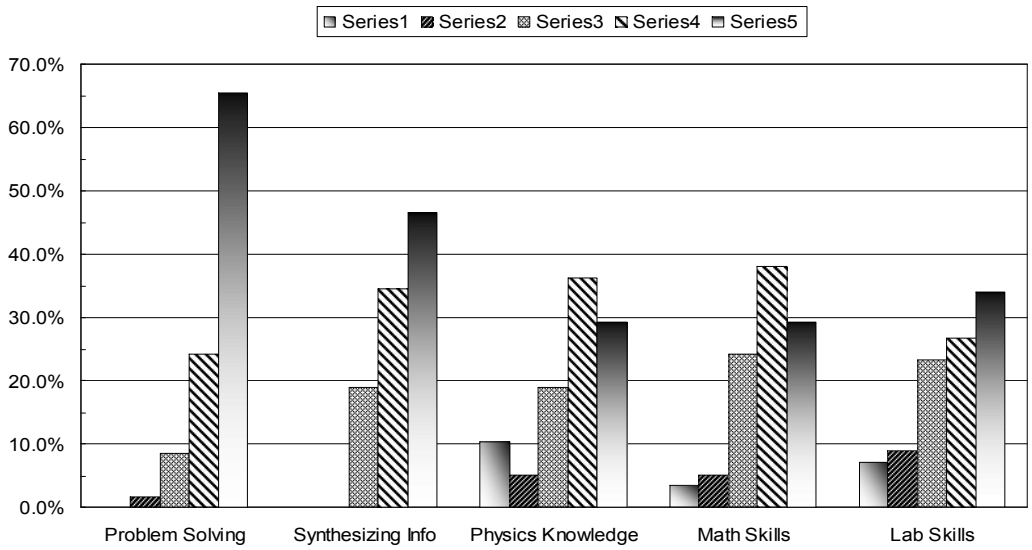
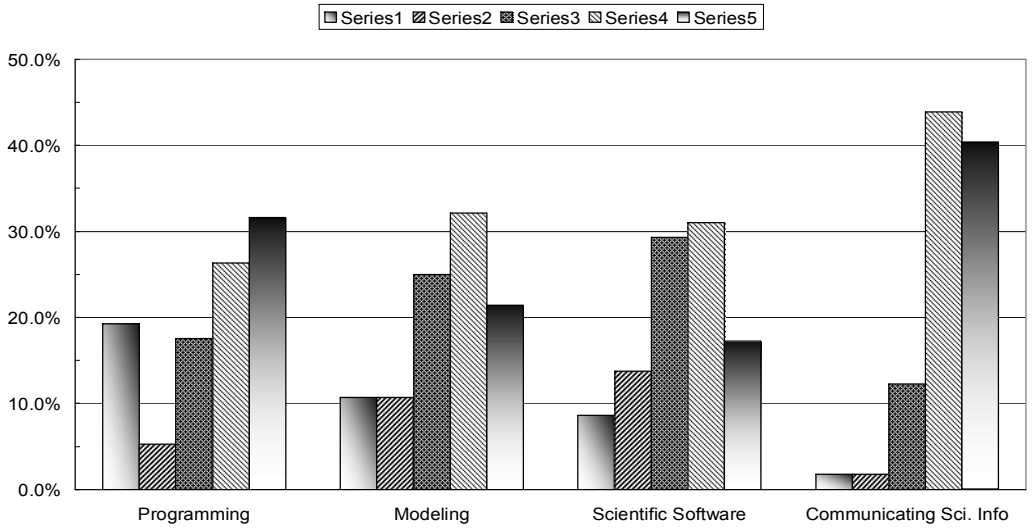


Figure 2b. TCNJ Program Effectiveness for Career

(1:not very import. 2:somewhat import. 3:important 4:very import. 5:extremely import.)



Figures 2a and **2b** summarize the importance on career advancement of some abilities and types of knowledge that a student should posses upon graduation from the Department of Physics. Problem solving, synthesizing information, and communicating scientific information were deemed very or extremely important by over 80% of the respondents. Computer programming, modeling, and use of scientific software were the perceived as the least important but still garnered at least 50% of very or extremely important ratings.

Figure 3a. TCNJ Program Effectiveness for Education
(1:not very effect. 2:somewhat effect. 3:effective 4:very effect. 5:extremely effect.)

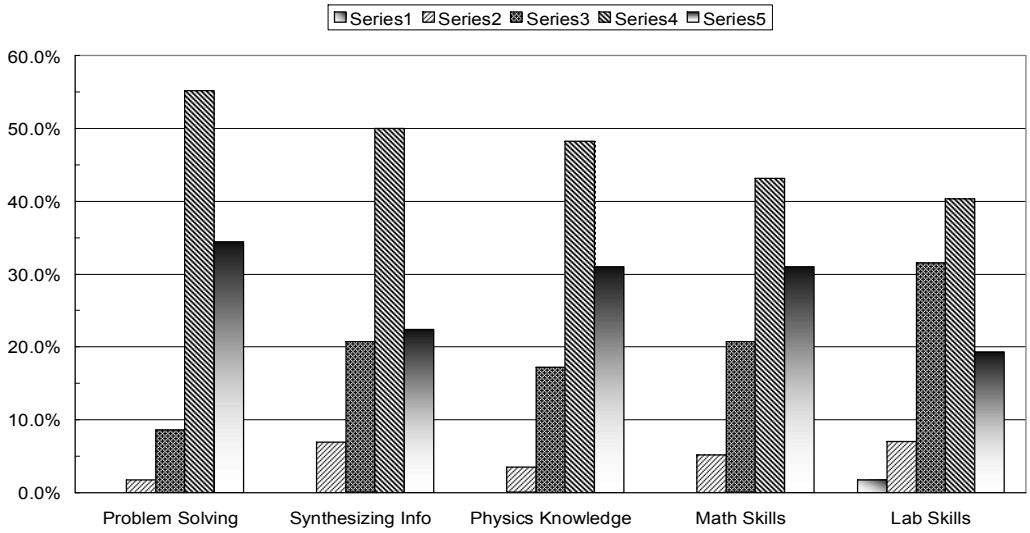
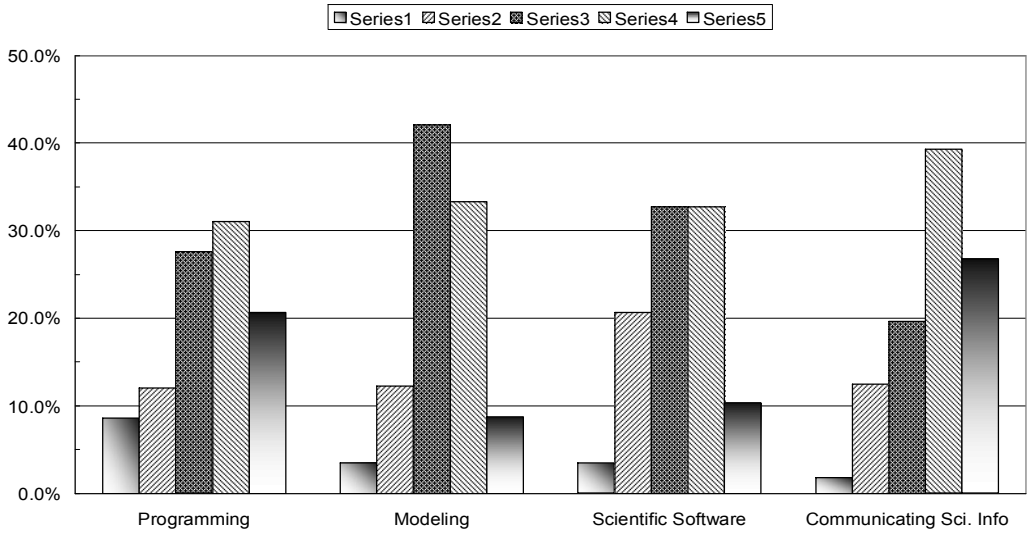


Figure 3b. TCNJ Program Effectiveness for Education
(1:not very effect. 2:somewhat effect. 3:effective 4:very effect. 5:extremely effect.)

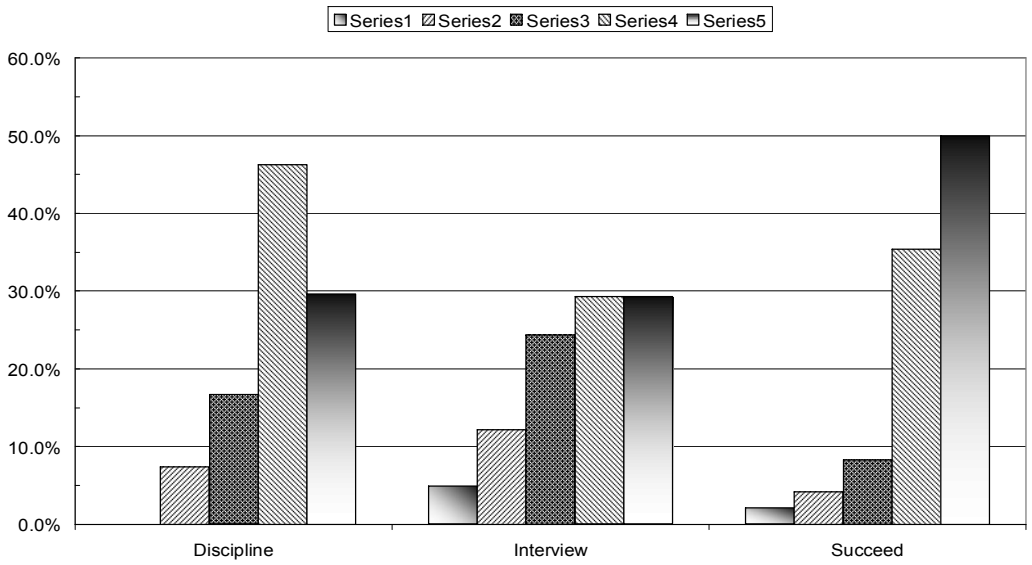


Figures 3a and **3b** summarize the education effectiveness of our program in developing abilities and types of knowledge. Problem solving, synthesizing information, physics knowledge, math skills, and communicating skills were assigned ratings of extremely or very effective by over 70% of the respondents. There is room for improvement in the use of scientific software, modeling, and computer programming.

Figure 4 presents the respondents' ratings of the overall preparation of TCNJ alumni relative to graduates from other schools. Although the results show alumni are clearly satisfied the quality of their preparation concerning discipline practice and success in

Figure 4. Overall Preparation

(1:not satisfied. 2:somewhat satisfied 3:satisfied 4:very satisfied 5:extremely satisfied)



graduate or professional education improvements are needed in preparing graduates for their first interviews. Over 43% of our alumni have gone on to graduate school with most achieving masters degrees. Four graduates have obtained Ph. Ds. in the past two years in Biomedical Engineering, Electrical Engineering, Geophysics, and Physics.

Figure 5 summarizes the current salary ranges. Thirty-eight alumni reported their salaries. Respondents attending graduate school did not report their TA or RA income.

Figure 5. Salaries

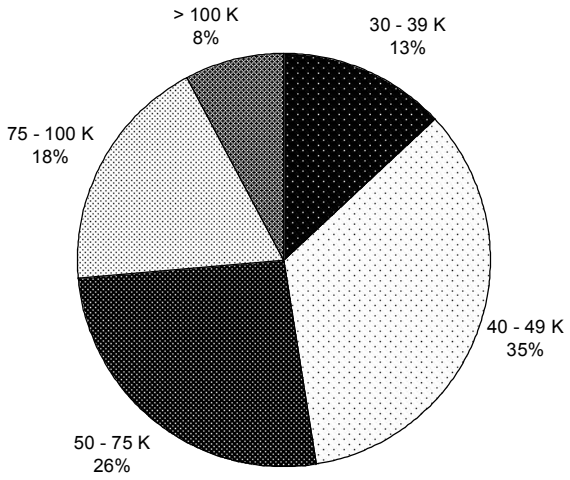


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Figure 6. Quality of Preparation

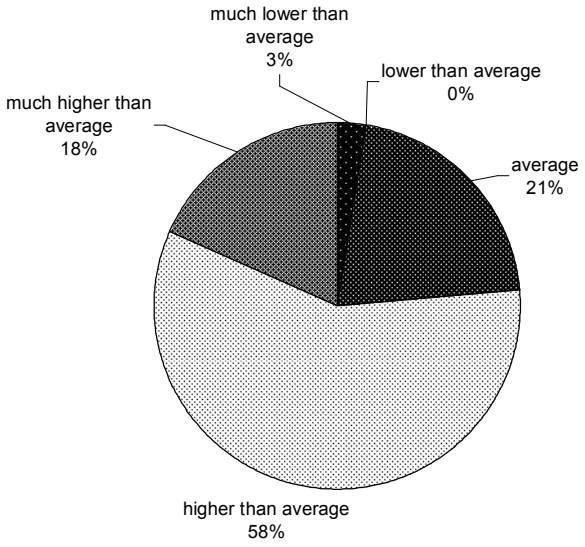

Figure 6 presents the ratings of our alumni about their educational preparation when compared to graduates from other schools. Seventy-six percent consider it higher or much higher than that of the average graduate from another institution.

Figure 7. Program and College Recommendation

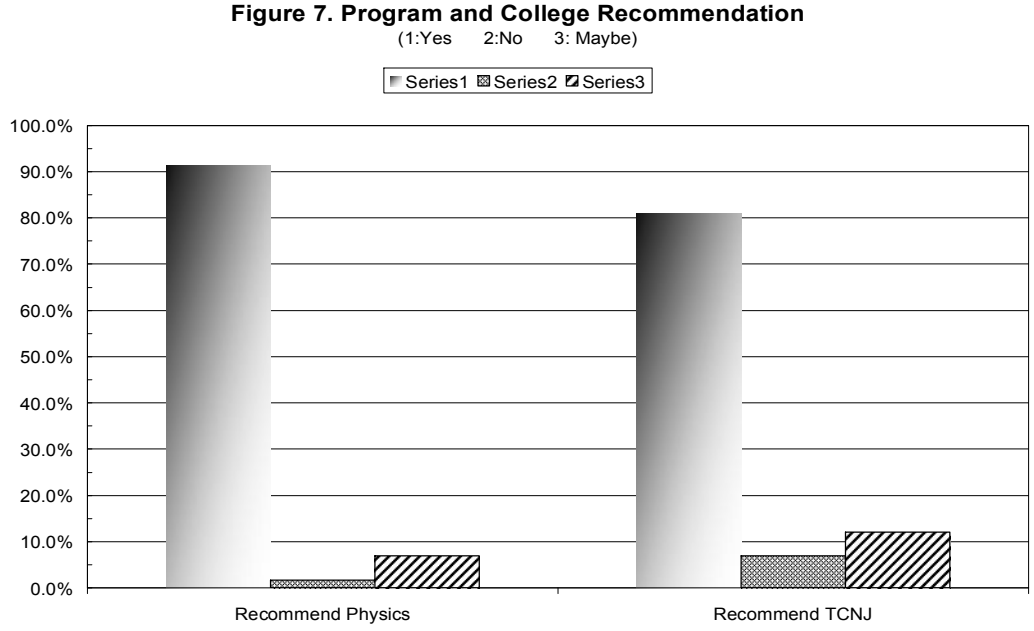

Figure 7 shows that over 90% of the graduates would recommend our program to friends or relatives. This number drops slightly when considering TCNJ in general.

APPENDIX I

2006 Alumni Survey:

Feedback, Education, and Employment

Department of Physics

The College of New Jersey

2006 Alumni Survey Feedback, Education, and Employment

I. Education Experience:

Attributes of a professional in your discipline that you believe will either continue to be or will become important in the future.

- Ability to synthesize information, often of very different types (5)
- Problem Solving abilities (12)
- Mathematical Skills (3)
- Application/Solution minded
- Ability to see the 'big picture' from small, often incomplete pieces
- Ability to work with others, Teamwork / Delegation (4)
- Ability to critically review others' work
- Software and programming skills--on a fundamental/conceptual level that can be applied to any language or software package in the future (10)
- Modeling
- Breadth of knowledge (5)
- Physics, Mathematics, and General Science Knowledge (Earth, Bio, Chem)
- A deep and conceptual understanding of physics topics (favoring depth over breadth)
- Well-rounded, in-depth knowledge of physics for teaching AP physics courses
- Solid Theoretical Knowledge
- Knowledge of physics, mathematics, statistics, and computer programming
- Knowledge of physics (3)
- Desire to improve teaching skills and physics content knowledge
- An understanding of the nature of scientific knowledge.
- An understanding of the social contexts in which science education takes place.
- Scientific Writing/Communication to science community & non scientists(23)
- Designing/Running a Laboratory, Lab/Instrument Skills (4)
- Ability to Build/Fix Equipment
- Research ability
- Experimental data analysis & statistical methods
- Reading academic papers and journals
- Ability to generate enthusiasm
- Enthusiastic (2), Empathic, Humor, Thick Skinned
- dedicated (5)**,** hard-working, Decisiveness, Leadership, Perseverance
- organized (2), Adaptability, Curiosity, Persistence/Patience (2), Equanimity, Professionalism (2)
- creativity (5), Critical thinking, Reasoning, Logical Processes, Abstract Thinking
- Proper ethical behavior in technology administration
- Proficient use of technology
- Social Networking
- Strong Memory and Ability to Learn Quickly
- Open-minded
- Intellectual Flexibility
- Able to build strong rapport with students
- Classroom management
- Communication with co-workers
- Linking different disciplines of physics & other sciences, i.e. biophysics
- Versatility in dealing with other disciplines
- Self Dependent

II. Recommended Improvements:

Recommendations you would make to the TCNJ Physics Department to improve its program.

- Emphasize comprehension more
- Make students spend more time thinking about concepts
- A preparation program for GRE Physics (2)
- "Real world" preparation / problem solving
- More homework (although I hate saying that)
- More team oriented assignments
- Encouragement of teamwork. Generally people do homework/assignments by themselves, but in the real world we also work on a team. More "paper and pencil" or "comp sci" team assignments rather than redundant instrument labs. Also, ensure all group members contribute equally.
- more physics tutors (3) – it helped me significantly
- more office hours for questioning
- More focus on scientific writing
- Create a scientific writing/communications class
- Create a required P/F class for all the majors on Wed mornings where two/three students present a research paper. This would be a relatively low stress way to hone one's presentation, critical analysis, and scientific argument skills.
- More opportunities to present scientific data. A scientific presentation and writing course may be of value.
- A deeper teaching of how to interpret experimental data and how to quantify the results.
- Increase instruction in scientific computer programs (8) Department should teach class not another department
- Numerical Methods Programming
- Linux/Sun based programming
- More computer programming in C++
- less computer programming outside of computational physics track (3)
- More "comp-sci-like" modeling and simulation "labs"
- More work with scientific software
- If a programming language is to be used in the various classes, ensure that students have taken the computer language prior.
- Continue to encourage/focus on undergraduate research (9)
- Keep emphasis on independent study (2)
- Encourage internships for those who seek to enter industry (4)
- More lab work, more focus on internships
- Internships - nonexistent when I attended
- partner with local companies for offsite classes, not just internships
- More experience on applying science
- More lab experience, basic and advanced (6)
- more emphasis on labs and demonstrations to do with classes
- Accelerate Gen Phys I&II for majors
- I think that there needs to be a "General Physics 3" course only for the teaching majors to cover material that could not be covered in General Physics 1 and 2
- More modern mathematical methods should be used (group theory, differential geometry)
- more mathematics training (3)
- A more in depth teaching of statistics and its application in the scientific field.
- Pace of most courses was a bit slow
- Overall difficulty of courses was a bit on the low side

- Offer more astronomy courses, and offer them more frequently
- Improve quality of upper level physics courses
- Use 'standard' texts in the courses (i.e. Griffith's etc.) (2)
- Two Semester of Quantum Mechanics must get into bra-ket notation, perturbation theory basics (2)
- More in depth quantum or statistical mechanics courses
- Better nuclear physics text book
- upper level physics courses run more like graduate courses
- Practical applications, encourage students to take engineering courses (2)
- Make all teaching track majors take at least one semester in biology, 3 in chemistry, 3 in earth science, 1 in E-Mag theory, 1 in particle physics
- A faculty concern with pedagogy--how are the undergraduates being taught and how do we know the instruction is effective?
- Support structures for physics majors--as a physics education person, I didn't really even feel like I was part of the department until my final semester.
- separate physics and chemistry students from biology students in teacher preparation classes
- Better communication with the Secondary Ed department for teaching majors
- Make Teaching Track a 5 year program
- Stress the interconnections between methods and subjects
- A class dedicated strictly to physics education
- More lab preparation for high school labs
- More electives in physics – for physics teaching
- Encourage All Students to take PRAXIS tests in 3rd or 4th year and apply for Certificate of Eligibility which never expires (fall back plan).
- Too much time in courses was devoted to mathematical derivations. While this is good for the students who want to go on to grad school, it does not help the teaching track students.
- Spend more time prepping students in teaching elementary-high school physics and less time with the advanced physics courses
- scheduling made it hard to take desired courses in time to graduate
- Student teaching option for urban or suburban education
- Work out that loophole that let earth science tack graduate without Calculus III or Math/Physics
- Hire someone else in the geology/geophysics field to enhance the earth science track
- Slightly more history of physics in lectures, to give more context
- require more physics classes, less "filler" classes
- less mandatory liberal arts electives
- Separate theory classes from lab classes
- Career path advice
- extra-departmental alumni mentor program
- Highlight career options in or nearly physics, especially EE; "hidden physicists" to use the parlance.
- We always wanted more access to the science facilities during non-traditional hours.
- Diversify Technical Skills in Sciences and Technology (Helps anyway as a Graduate Student)
- Instruction in machine shop skills
- Have Dr. Gleeson and Dr. Ochoa teach every physics class (this may be impossible).
- Encourage collaborations between departments to foster communication, organization, and political skills.

III. Most Valuable Aspects

Aspects, about the TCNJ Physics Department program, that were most valuable for your career preparation.

- Problem solving skills (5)
- They taught me how to tackle absurdly difficult problems.
- Independent study with a faculty member to give hands-on mentoring of how to actually DO research (10)
- Being able to present an idea to an audience (e.g. independent study) and answer questions or back up a statement
- Having the opportunity to work independently on a long-term project
- Encouragement of independent thought and research
- Giving a talk of my undergraduate research experience
- Lab work was excellent (5)
- Lab portion of upper level courses
- Lab courses with a direct hands-on approach
- Hands-on experimental work in the optics lab
- Hands on Lab skills with Dr. Ochoa.
- decent comfort level with lab equipment
- Working in the observatory, planetarium, and astronomy computer lab
- Lab experience with other workers
- Well rounded, diverse curriculum and the ability to take classes for the major outside of physics (math, chem, bio, etc)
- Exposure to different areas of physics
- Being forced to use concepts learned from one class in other classes.
- promote problem solving, including freedom of doing it your own way (write a program in any language to solve for XYZ)
- courses provided a hands on experience to relate material taught in lectures
- Strong Classroom Fundamentals
- Variety of classes (General Track)
- Friendly, approachable faculty - accessibility made asking questions easier, and deeper understanding of subject possible (2)
- teachers willing to answer your questions
- Small Class Sizes (lots of interaction) (8)
- Small classes were great. Got to know fellow classmates and professors very well!
- student-teacher interaction (3)
- personal attention
- professors were excellent (3)
- Knowledgeable and approachable professors (3)
- The faculty, caring and devoted professors
- Dr. Kolp's guidance, flexibility, and patience
- Dr. Pfeiffer's scholarship & rigor (I'm not kidding)
- Dr. Gleeson's clarity and affability
- Teachers were great (Ochoa “you the man”)
- The physics dept. professors and students formed a tightly knit group
- Helpful professors and peers (2)
- Tight-knit department made learning enjoyable
- The faculty is phenomenal (some of the most helpful people I’ve ever met)
- Very helpful, willing faculty.
- friendship with staff
- Family atmosphere - closeness of faculty and students.

- There was always help available if needed.
- The size of the department (relatively small compared to other majors).
- A little bit of Physics fun was always an appreciated break.
- Personal rapport with faculty (2)
- They fostered a sense of community and equality by allowing easy access to professors. They set the standard for what I expect from professionals.
- Variety of professor's interests
- Availability for consultation with advisor
- knowledge gained about the subject matter
- ability to communicate technical concepts to others
- ability to condense data in a meaningful way
- The ability of the students in the major to work well with each other and have fun together outside of the classroom.
- Group Collaboration
- Learning to form peer groups to work on a task
- Ability to work with others
- challenging curriculum and assignments
- Challenging the Students
- High expectations
- Fundamental knowledge of physics (4)
- Optics and Nuclear were very good, and many schools don't offer them for undergrads.
- Physics and Math skills.
- Mathematical Skills (2)
- Great Math background
- Mathematic and general programming skills.
- Computer programming (9)
- Programming was invaluable, though the course we were required to take didn't really prepare us, we had to learn on our own.
- Emphasis on computer use
- Great integration of programming skills
- good foundation in scientific computer programming - most other grad students were lacking here
- computational problem solving techniques
- Thought Processing
- Synthesizing Information
- Broad Understanding
- Ability to teach myself what I needed to learn.
- technical skills I learned
- Positive Re-enforcement
- Communicating Scientific Knowledge
- Professional Presentations
- Methods class
- Teaching Methodology
- Interest in Scientific Discovery
- Having tracks allows you to tailor your education to be successful in a particular career path
- Allowing me to take more engineering courses than what was normally allowed or built into the track.
- Facilities – the new building was a pleasure to work in

IV. General Comments

- I think the program is very strong, but more effective at preparing students for employment than grad school.
- Hello TCNJ physics dept! I hope you all are doing well. First, a comment on my TCNJ Physics Education: I entered a Geology graduate program as the only non-geology major. Most of my graduate courses and thesis work only used a very small subset of what I had learned at TCNJ. However, being a Physics Major taught me how to think critically and solve problems--necessary skills few other graduate students arrived with. If there are any Physics students (especially those in the Earth Science Track), interested in geophysics, geochem, ocean physics, or climate/paleoclimate, please forward them my email address (rearley@rci.rutgers.edu). I'd be happy to provide any insight and information, as well as information on what Rutgers has to offer. Cheers! -Ryan -- Ryan J. Earley Rutgers University Geophysics
- I felt that I had an excellent education at TCNJ. The physics department faculty were very approachable, and made themselves available for any questions or deeper research. At an REU, I was able to compare my education with that of others across the country, and found that a physics student from Harvard with essentially the same grades as myself was also of approximately the same ability. Thus, my education seems to have met the standards of that prestigious university. The only lack is our poor track record with the GRE physics. Despite that this test is widely understood not to reflect a student's actual ability; it is used by many prestigious grad schools as a metric of that very thing. Proper test preparation has historically been lacking, and I feel that a directed effort by the faculty to reach out to students and offer a somewhat formalized preparation for the test would go a long way to remedying our poor track record in that regard.
- The TCNJ physics department is one of a kind. While attending TCNJ I felt (and still feel this way when I go back to visit) that I was part of a close-knit family. The professors and staff are caring, devoted, helpful, and very knowledgeable in their fields. I wish that everyone could have had the same experience as I did when I was an undergraduate student in the TCNJ physics department!
- I loved my time at TSC. Hi Everybody!
- The professors in the physics department have high expectations of all physics students which creates an environment of hard-working, motivated learners.
- I was pleased with the opportunities TCNJ provided, not only in my chosen field, but also in other areas (residence life, management, etc.).
- My only problem with the education at TCNJ was the perception that as a college we were more concerned with following trends and less concerned with doing what was best for the students. We also seemed ready to paint things with a broad brush but failed to realize that education isn't a one-size fits all endeavor. The methods that work well for teaching and learning biology or philosophy may not be the best way to teach physics or engineering. Furthermore, personal learning styles differ and should be taken into consideration. Regardless, my experience was a positive one. I just wouldn’t recommend TCNJ to my little brother as anything more than a safety.
- Independent study work at TCNJ most closely resembles what I have experienced in the "real world" and all students should be encouraged to perform such work.
- Very happy with my tcnj experience. I wish there were more graduate degrees, I would definitely participate.
- My fellow undergraduates at TCNJ are much better prepared for Physics courses than the average undergrad I encounter out here at Penn State (in terms of ability to work independently and find solutions for themselves).

- I was disappointed with the administration of The College of New Jersey in its ability to effectively communicate with its students. Examples include the changing of the college name, the changing of the college logo, and the "Transformation." The majority of the students were unaware when the changes were being formulated and did not know until the processes were already being implemented. As a high school teacher of approximately 100 students a year, it is sometimes hard for me to recommend my students attend the College because of what has happened regarding the Transformation. I also have not donated any money to the College because of these reasons and will not do so until the current administration is no longer employed.
- It is very hard for me to determine whether the physics education at TCNJ is comparable to my colleagues in Germany. Since the bachelor doesn't really exist, I have to compare myself to people with masters. Compared to them I would rate my preparation as "fair" in physics and math. What has helped tremendously was the preparation in computer programming (not enough for my field, but if I had wanted to learn programming I could have studied computer science). Also the general liberal arts background has helped quite often.
- TCNJ gave me an excellent education. I continue to recommend TCNJ to all of my students who are interested in education.
- From my experience in graduate school, my main suggestion would be to incorporate scientific writing into the program. While in attendance I did not have to do any scientific writing, but now in graduate school one of the main focus' is on how to write papers for submission and how to write grants. I feel that a little bit of preparation for these things in undergrad could put TCNJ students on top of all other students.
- The TCNJ Physics program provides a good foundation for those who wish to either continue on to graduate school or enter industry. However more needs to be done for those who wish to enter industry since the program does not allow enough "engineering" type courses to be of use after graduation. Time spent on computer programming for the various classes was a definite plus. Flexibility should be allowed in the liberal arts track for those students wishing to seek employment after graduation to substitute courses for those other physics classes such as theoretical physics that amounts to nothing more than someone checking the box to graduate. Allowing someone to substitute for another scientific or engineering course that helps provide him or her with the skill set more closely aligned to what is useful in industry, is the edge a TCNJ graduate needs.
- I may not use the physics on a day to day basis in my current career, but the problem solving (being able to look at a system for its parts as well as its whole) and communication skills I learned from the Physics department are invaluable and have given me the tools I need to succeed in my line of work.
- TCNJ has become synonymous with success. The decision to enroll at TCNJ is one of the best I have ever made.
- Dr. Ochoa, I appreciate everything you've done for me when I was a student. You're a great person and teacher.
- I think that the Dept. is too small to successfully support 5 major tracks. In general, I think there are too many majors available at TCNJ – a liberal arts education does not lend itself to specialization.
- Any poor grades I may have received at TCNJ were the outcome of my lack of effort. These grades (2.5 GPA) do not reflect how much my education from the Physics Dept. has influenced my life in a positive way. Learning from such kind professors (such as Gleeson and Ochoa) was a great experience – Thank you.

V. Employment

Industry:
SRA International, Inc. - Government Services - Senior Research Physicist, NJ
Power Engineers – Telecommunications – Engineer
Applications Engineer - Photonics Lab Equipment - Thorlabs, Inc. Newton, NJ
Senior Systems Engineer – Aerospace - Lockheed Martin
Solutions Architect - Factiva - Dow Jones & Company, Princeton, NJ
Senior Member of Engineering Staff, Government Contractor, Lockheed Martin, Moorestown, NJ
Head of Thin Film Department, Small Optics / Metrology equipment - Max Levy Autograph, PA
Field Scientist II - Environmental Consultant - PMK Group - Farmingdale, NJ
Lead Communications Engineer - FFRDC / Defense Contractor - The MITRE Corporation, NJ
Scientist - Defense Contractor - Xybion Corporation
Engineer 1 - Sensor Technology Specialists - David H Pollock Consultants, NJ
Senior Consultant - IT - Steria Mummert Consulting AG - Frankfurt am Main, Germany
Consultant - IT - Consulting / Databases & J2EE - usd.de ag, Langen, Germany
Senior Research Biologist - Pharmaceutical Research/Imaging - Merck Research Lab, PA
Scientist,Lab Manager – International Flavors and Fragrances - NJ
Lab Technician - French Color and Fragrance - NJ
Sr Mgr. Sarbanes Oxley – Pharmaceutical - sanofi-aventis
Senior Auditor / Consultant - Accounting / Auditing - Ernst & Young, LLP
Senior Scientific Programmer/Analyst - Scientific Applications – SAIC
Software Engineer – ARIS -Telcordia, Piscataway, NJ
Assistant ultrasound tester - Non destructive exams – NDE
Engineer – Scientific Research Corporation

Government:
Pyrotechnic Project Engineer, US ARMY Pyrotechnics Research and Technology, Picatinny, NJ
Programmer, Applications Software Development – Chandra X-ray Observatory, Harvard-Smithsonian, Cambridge, MA
Reference Librarian, Edison Main Public Library, Edison, NJ

Schools/Education:
Supervisor of Technology - Hillsborough Board of Education, NJ
Director of Technology - Absecon School District, NJ
Physics, Physical Science Teacher - Sayreville Board of Education, NJ
Physics Teacher - Becton Regional High School East Rutherford, NJ
Physics, Earth science teacher – West Windsor-Plainsboro High School South, NJ
Physical Science Teacher - Mainland Regional High School
Physics & Chemistry teacher – Northern Valley Demarest, NJ
Teacher - Board of Education for the Vocational-Technical Schools of Union County, NJ
High School Science Teacher - Hamilton Township Board of Education, NJ
High School Teacher - South Brunswick Board of Education, NJ
Science Teacher - Oakcrest High School, NJ
Science Teacher - Freehold Regional High School, NJ
Science Teacher - Pasco County, FL
Teacher - Lenape Regional High School District
Teacher – Hamilton Township Board of Education, NJ
Teacher – North Hunterdon High School - NJ
Teacher - Rahway Board of Education (High School), NJ
Teacher - Elizabeth Board of Education (High School), NJ

Teacher - Mahwah High School, NJ
Teacher – Northern Highlands High School, NJ
Teacher – Manasquan High School, NJ
Middle School Science teacher - St. Paul Lutheran School, Miami, FL
Substitute Teacher - Mercer County Board of Education, NJ

Massachusetts Institute of Technology - Postdoctoral Fellow
University of Surrey, Guildford, UK - Research Fellow
Various Colleges, Adjunct professor of physics

VI. Degrees & Institutions

Doctoral:
Ph.D. in Geosciences, Penn State University (2005)
Ph.D. in Physics, Rutgers University (2005)
Ph. D. in Electrical Engineering, University of Delaware, Newark, DE (2004)
Ph.D. in Biomedical Engineering, Mayo Graduate School of Medicine (2004)

Master:
M.S. in Physics, Lehigh University, Bethlehem, PA, USA (2006)
M.S. in Physics, Michigan State University (2004)
M.S. in Physics, The College of William & Mary, Williamsburg, VA (2002)
M.S. in Physics, University of South Florida, Tampa, FL (2000)
M.S. in Physics, Miami University, Oxford, OH, USA (1999)
M.S. in Physics, Rutgers University, NJ (1998)
M.S. in Physics/Medical Physics, Wright State University, Dayton, Ohio (1998)
M.S. in Physics, University of Delaware, DE (1997)
MS in Electrical Engineering, Walden University, Minneapolis, MN (2005)
Masters in Mechanical Engineering, Drexel University, Philadelphia, PA (2003)
M.S. in JIAFS, George Washington University, Washington D.C. (2004)
M.S. Engineering Systems, Colorado School of Mines, Golden, Colorado, USA (1998)
Masters of Computer Science, Rutgers University, New Brunswick, NJ (2005)
M.S. in Geological Sciences—Geophysics, Rutgers University, Piscataway, NJ, USA (2006)
Masters, Atmospheric Science, Colorado State University, Ft. Collins, CO (1994)
M.S. in Environmental Science, New Jersey Institute of Technology, (2004)
Masters of Educational Administration, Rutgers University, New Brunswick, NJ (2000)
MS in Library Science and Information Studies, Rutgers University (2006)
MBA, Professional Accounting, Rutgers University - Graduate School of Management (1995)
MS in Multicultural Science Ed., University of Wisconsin-Madison (2001)
Masters of Music and B. M., Music Performance, University of Maryland, MD (2006)

Pursuing Doctoral:
Ph.D. Program in Physics, ABD, Rutgers University, NJ (2000-2004)
Ph.D. Program in Physics, University of Delaware, Newark, DE, USA (2005 - present)
Ph.D. Program in Physics, University of Connecticut (2004 – present)
Ph.D. Program in Physics, Drexel University (2005 – present)
Ph.D. Program in Physics, Penn State University (2004 – present)
Ph.D. Program in Physics, Michigan State University (2002 – present)
Ph.D. Program in Geological Sciences—Geophysics, Rutgers University, NJ (2006 - present)
Ph.D. Program in Teacher Education - University of Wisconsin-Madison (2005 – present)
Ph.D. in Engineering Physics Program, Michigan Technological University (2004 – present)

Ph.D. Program in Biomedical Engineering, Stony Brook University, New York (2005 – present)
Ph.D. Program in Mathematics, Stony Brook University, Stony Brook, NY (2005 – present)

M.D. Program, Jefferson Medical College, Philadelphia, Pennsylvania (2003 – present)
Ph.D./MD Medical Scientist Training Program, University of Alabama School of Medicine, Birmingham, AL (2003 – present).

Pursuing Masters:
Masters in Educational Teaching Technology, Ramapo College of New Jersey, Mahwah, NJ, (2006 – present)
M.S. Program in Mathematics with concentration in Math Education, Montclair State University, NJ (2004 – present)
M.Ed. in Science Education, University of Central Florida (2005 – present)
MBA program, Rutgers University (2003 – present)
Masters of Art, Community Counseling: Substance Abuse and Chemical Addictions, The College of New Jersey (2006)
Masters of Education, Exercise & Sports Science Athletic Administration program, TCNJ (2005 – present)
Masters in Supervision & Administration Program, Seton Hall University, NJ (2004 – present)
Masters of Divinity Program, Boston University School of Theology (2004 – present)
M.S. Educational Technology Program, Ramapo College, NJ (2003 – present)

Other Studies:
Materials Engineering, Stevens Institute of Technology (2005) – Non degree
Physics Teaching Credential, California State University, Long Beach, CA (2004)
MCSE, Microsoft Certification, Marco and Associates, Northfield, NJ (2000)

APPENDIX II

2006 Alumni Survey

Department of Physics

The College of New Jersey

Physics Department Alumni Survey

Personal information

Name: Last name when a student:

Email: Address (City, State, Zip):

Telephone (work):

Telephone (home):

Education

TCNJ undergraduate Physics track: ____ Liberal Arts ___ Computational ____ Teaching ____ Earth Science

TCNJ Graduation year:

Other academic institutions attended:

Name	City, State, Country	Program Name	Dates Attended	Full/Part Time?	Degree Obtained (if any)

TCNJ Program Effectiveness

for career ot very important omewhat important mportant ery important xtremely important A not applicable	ow are some abilities or types of knowledge that a student uld possess upon graduation from the Department of Phys ase use the scales on each side of the table to rate their portance for your career advancement as well as the ctiveness of your education at TCNJ in developing them.	*education was* ot very effective omewhat effective ffective ery effective xtremely effective A not applicable
2 3 4 5 N/A	ntific problem solving	2 3 4 5 N/A
2 3 4 5 N/A	thesizing information	2 3 4 5 N/A
2 3 4 5 N/A	owledge of physics	2 3 4 5 N/A
2 3 4 5 N/A	thematical skills	2 3 4 5 N/A
2 3 4 5 N/A	or instrument skills	2 3 4 5 N/A
2 3 4 5 N/A	nputer programming	2 3 4 5 N/A
2 3 4 5 N/A	deling or simulation	2 3 4 5 N/A
1 2 3 4 5 N/A	application of scientific software	1 2 3 4 5 N/A
1 2 3 4 5 N/A	communicating scientific information	1 2 3 4 5 N/A

Educational Experience

Please list up to three attributes of a professional in your discipline that you believe will either continue to be or will become important in the future.

a)_____
_____

b)_____
_____

c)_____
_____

How would you rate your overall preparation to:

	not applicable	extremely satisfied	very satisfied	satisfied	somewhat satisfied	not satisfied
a) practice professionally within your discipline?	O	O	O	O	O	O
b) interview and obtain your first job after graduation?	O	O	O	O	O	O
c) succeed in subsequent graduate or professional education?	O	O	O	O	O	O

If employed in physical sciences, how do you rate the overall quality of your educational preparation, relative to recent graduates from other schools? ____ much higher than average ___ higher than average ____ average ____ lower than average ___ much lower than average

What three things would you recommend to the TCNJ Physics Department that would improve its education program?

a)_____

b)_____

c)_____

What three things about the TCNJ Physics Department did you find most valuable (for your career preparation)?

a)_____

b)_____

c)_____

Would you recommend a TCNJ physics education to a friend or relative? ____ yes ____ no ___ maybe

Would you recommend another TCNJ program to a friend or relative? ____ yes ____ no ___ maybe

Professional Development

Membership in professional organizations:

Advanced professional certification:

Employment

Company (City, State, Country)	Product/service	Yrs. employed	Job titles	Salary Code*
Current employer		_____ to _____	start: finish:	start: finish:
First employer		_____ to _____	start: finish:	start: finish:

*Salary codes in thousands per annum: A<30; B= 30-39; C= 40-49, D= 50-75, E= 75-100, F >100

Comments

Please use the space below for comments you may have about your education at TCNJ or about this survey.