ECE 09.461 Professionalism & Consulting in Engineering

DR. ROBI POLIKAR

Electrical & Computer Engineering

Lecture 1

Welcome!



Why Are We Here?

History of this class:

- This class goes back to the very beginning of this program
 - Prior name: Clinic Consultant in ECE
- What to do with four credits?
 - After the credits were doled out for the Engineering Clinic sequence, all programs except ECE used the remaining 4 credits for technical courses
 - ECE decided to use these credits for skills and knowledge-building on entrepreneurship



- The core focus was on simulating a consulting experience through the Engineering Clinics, and that core remains in this course to this day.
- Great! But, do you really need to repeat this four times?
 - Reduced to two credits in mid-2010s, with one credit going to Modules in ECE. Now only 1 credit.
 - OK, but what is in this class?



WHAT IS IN THIS CLASS?

- Traditionally, some basic concepts on how to find clients, managing client expectations, some project management, and some ethics.
 - 2021 Course instructor suddenly retired
 - Review of course content showed a missed opportunity

Starting Fall 2021: A reluctant new instructor

- An opportunity:
 - To revamp the class to ensure that ABET student outcomes for this class are fully met
 - Also include new topics on starting a business, project management, contract issues and a more principled coverage of the ethical and professional judgment
 - Continuous improvement:
 - More recently, we also noticed a lack of certain background in professionalism, financial literacy, etc.
- So: a new approach







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Rowan University

Welcome!

PROFESSIONALISM & CONSULTING IN ENGINEERING

Your Host:Dr. Robi PolikarOffice & Phone:EH 346B, (856) 256-5372E-mail:polikar@rowan.eduClass Meeting:Mondays, 15:30 – 16:45; Science 126Office Hours:Whenever I am in my office, and the door is open (which is often)Prerequisites:ECE Senior / Senior Engineering Clinic (concurrent)Required Text:None



WHAT IS IN THIS CLASS? A CLASS IN TWO PARTS

Part I: Best Practices in Professionalism & Consulting

- Resume writing and interviewing skills
- Basic elements of being a successful professional and a successful consultant
- Soft skills: people skills, communication skills.
- Finding clients; marketing of skill/interest set to a customer with a requirement
- Managing client expectations
- Negotiation of project scope and resources
- Financial considerations
- Intellectual property and other legal considerations
- Project management methodologies and tools
- Project completion (analysis, design, prototype, test, demonstrate, present)
- Informal and formal status reporting
- Ethics in the workplace
- Financial literacy
- ...and some of the best advice from people who have done (and are still doing)
 - Guest lectures

WHAT IS IN THIS CLASS? A CLASS IN TWO PARTS

Part II: Practicum of Consulting

- Completing an actual consulting work
 - Other Engineering Clinics
 - Faculty with research projects
 - Teaching / lab development
 - Clients outside of Rowan Engineering (subject to conflict-of-interest rules)



PRACTICUM OF CONSULTING

In this class, you will:

- Identify a client who has a specific <u>engineering design problem</u> that can be addressed with the expertise and skills you have.
- Analyze the problem and
 - formulate a problem statement
 - identify the requirements, constraints and resources
 - negotiate a scope (plan) of work that includes specific deliverables in order to address the problem with an optimal solution.
- Implement (and validate) the optimal solution, given requirements, specifications, constraints, and resources, and provide the client with an appropriate and acceptable solution that meets the requirements, specifications, and constraints.
- Obtain client approval of successful completion.
- Provide oral updates on your progress, as well as a final, formal, written report that describes your activities and solution for each of the above-listed items.
- Submit Engineering Design and Impact Statement



POWER PERSON	Pr	ROJECT APPROVAL FORM
	Enderstand Enderstand Exercise Enderstand Exercise Exercise Exercise Exercise <td< th=""><th>Project Deliverables Describe what exactly will be delivered to the client. Be very specific. This is a contract Deliverables Describe what exactly will be delivered to the client. Be very specific. This is a contract Deliverables Describe brief assessment of resource requirements so that it is clear what is needed—and available to complete the work. If you need purchase parts / supplies / components, attach a bill of materials. Budget</th></td<>	Project Deliverables Describe what exactly will be delivered to the client. Be very specific. This is a contract Deliverables Describe what exactly will be delivered to the client. Be very specific. This is a contract Deliverables Describe brief assessment of resource requirements so that it is clear what is needed—and available to complete the work. If you need purchase parts / supplies / components, attach a bill of materials. Budget
General Project Narrative Requirements and	Requirements & Specifications: Provide the specific details <u>of your</u> work and task(s) within the above-described overall project. Clearly and concisely state the requirements, including a technical description of what needs to be done, engineering details, project attributes, and any specifications.	Milestones: (Identify dates of key milestones/deliverables.) Project Initiation Supplies/equipment obtained, orders placed for non-local acquisitions Preliminary prototype, design, solution / design review Final Project Completion & Sign-Off Project Initiation Signatures/Dates Consultant: Consultant: Client: Consultant: Client Evaluation: Consultant requests the Client to provide a grade on A - F scale along with brief ustification for that grade. Client may also provide feedback for the Consultant's work with respect to meeting Prequirements, specifications and constraints (considering any agreed upon changes during the work).
Specifications Constraints (what can you not do?)	Constraints: Briefly explain the constraints of the project, i.e., specific limitations and restrictions on how you may solve the problem (i.e., what can you <u>not</u> do to address the issue).	Disclosure: Through these signatures, the consultant and the client confirm that there are no real or perceived conflict of interests between them. What, when and how to submit: At project initiation, the Consultant submits this form and a Gant chart (client leaves evaluation area and grade blank) to course Canvas page. At project conclusion, the Client's signature is including Client assigned grade and evaluation to polikar@rowan.edu "and" to the consultant submits this form (with all signatures, including Client assigned grade and evaluation to polikar@rowan.edu "and" to the consultant submits a fully signed and completed copy of this form, a final report, and the Engineering Design & Impact Statement through chase Graves page. If client's signature is used to client assigned grade and evaluation to polikar@rowan.edu as an e-mail. Boli Polikar, Rowan University, (r) 2021-2021

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The Front Barrow			[IMPACT	<u>Stat</u>	EMENT
F	Rowan Electrical & COMPU University ENGINEER	TER ING	Rowan University	ELECTRICAL &	& COMPUTER	
Co Cli Pro	CLINIC CONSULTANT IN ECE ENGINEERING DESIGN & IMPACT STATEMENT onsultant Name & Rowan ID ient Name oject Title	J.	Part 2 – Consideration of Impact Factors design or service decisions on the following Describe the public health, safety and welf	You must think about and consider the impact of yo g factors. All questions must be answered. fare factors considered in your design/service, along	ur solution, with their impact	
Bri Pic yo	rief Description of the Consultant Work (150 words or less) lease answer <u>all</u> of the following questions. The font size will decrease as you add text to accommodate all the text ou enter. You can also use additional space and pages if needed. Completed form must be attached / submitted		Describe the global, social and cultural fact	tors considered in your design/service, along with th	eir impact	1
Wi Pa W ad we	itm your report. art 1 – Engineering Design Process /hat is the engineering design process you used? Briefly describe: i) problem definition and opportunities for dvancing technology; ii) technical requirements; iii) timeline / tasks / deliverables; iv) trade-offs and alternatives that ere considered, v) risks considered; vi) final design: how did you test, analyze, evaluate and verify your solution?		Describe the environmental factors conside	ered in your design/service, along with their impact		Impact Factors
Engineering Jesign Principles			Describe the economic factors considered i	in your design/service, along with their impact		
Wh al	Vhat are the multiple realistic constraints in your project: Constraints are specific limitations and restrictions on ow you may (or may not) solve the problem. Constraints are different than design specifications (already described bove). Every project must mention the applicable constraints.		Part 3 – Professional Practice & Growth Ethical and professional considerations: Using t (or did) in the context of global, economic, envii addressed. Identify the capabilities, consequenc	the four-corners approach, explain what ethical and profes ronmental, and societal factors; how you address them or ces, duties and virtues associated with your design / servic	ssional issues may arise how can they be re / decisions.	
Constraints	Vhat engineering standards were applicable or did you use / follow? Every report must mention the <u>applicable</u>					Ethical Considerations
Engineering Standards	ngineering standards. Include the name/citation (e.g., IEEE 1451) and brief description of each standard.		Consultant Signature:		© Real Feature, 2021 - 2023	Rowan University



WHAT IS YOUR SUPERPOWER? Yes, You Have One... or More

Want others to pay you for your skills?

- Yes, you all have skills that may be useful to other people – so much so that they may even want to pay you for it!
- But first: identify your strength
 - What are you good at? What is your superpower?
 - Make a list of your skills
 - In-class exercise: let's do it right now!
 - It can be a common topic (that others also do), but it can also be narrow, a niche topic:
 - In fact, the narrower / the more niche the topic, the more you may be able to charge for your services



IDENTIFY YOUR SKILLS

- Make a list of everything that you think you have a particular knowledge or skill (don't worry yet whether that is marketable):
 - Any specific technical topic:
 - Hardware design
 - Software design
 - An emerging topic (e.g., IoT, AI, blockchain, VLSI / chip design, etc.)
 - " Use of a particular tool (perhaps a software platform, e.g., Matlab, Cadence, etc.)
 - Certain standards
 - Regulatory information
 - Anything that requires licensure or certification
 - Certain processes / methodologies / functions
 - Remember: this need not be technical: tax preparation, project / personnel management
 - Even perhaps a hobby photography, carpentry, flying drones, art, ballroom dancing, can all lead to a type of consulting business (but the consulting you do in this class must be engineering related).



IDENTIFY YOUR SKILLS

Further edit that list:

- " Which of these skills do you think are very common (more competition)?
 - Working knowledge of Calculus, C++, Python, Matlab, basic circuit design
- Which of these skills are less common (less competition)?
 - Complex software / hardware platforms, expert knowledge of Cadence or other EDA tools, or even ability to use common platforms to do uncommon things
- Which of these require some sort of additional training / certification (even less competition)?
 - Licensure (P.E.), accreditation officer, security clearance

• For the purposes of this class, you need to focus on technical / engineering skills.





• Put it out there:

• Resume

20

LinkedIn Profile



 There is almost always demand for any skill / knowledge, if you know where to look for it.

YES, THERE IS DEMAND!

- My first consulting business:
 - Tutor math / science as a college student to high school students who were struggling and/or preparing for standardized exams!
 - Yes, that is consulting: charging money for sharing your specific knowledge
 - Again, for this class, tutoring Calculus would not be an appropriate project; however, serving as a learning assistant in a lab may be, so long as there is some meaningful engineering design component.





ABET defines engineering design as follows, a definition we will also use for the purposes of this course.

ABET's Definition

Engineering design is a process of devising a system, component, or process to **meet desired needs and specifications within constraints**. It is an **iterative**, **creative**, **decision-making process** in which the basic sciences, mathematics, and engineering sciences are applied to convert resources into solutions. Engineering design involves **identifying opportunities**, **developing requirements**, **performing analysis and synthesis**, **generating multiple solutions**, **evaluating solutions against requirements**, **considering risks**, **and making trade- offs**, for the purpose of obtaining a high-quality solution under the given circumstances.

For illustrative purposes only, examples of possible constraints include accessibility, aesthetics, codes, constructability, cost, ergonomics, extensibility, functionality, interoperability, legal considerations, maintainability, manufacturability, marketability, policy, regulations, schedule, standards, sustainability, or usability.



FINDING PROJECTS

Start looking for them now!

To do so:

- Identify your expertise: what are you good at?
- Identify your passion: what do you enjoy working on?
- Identify your client: Is there a clinic or research project that requires that expertise?
 - Reach out to the clinic project manager (cannot be your own current clinic project)
 - Check out the <u>ECE Consultant Requests for Spring 2025</u> for projects from Engineering Faculty
- Is there a class that you really enjoyed, and understood really well?
 - Reach out to the course instructor to become a learning assistant (must be an ECE class). Need to think
 carefully how to cast LA responsibilities as engineering design. It can be done, but requires a bit of thinking.
- Can a client be outside of Rowan Engineering?
 - Yes! ... as long as there are no real or perceived conflicts of interest.
- Remember: Consulting for a non-ECE project also satisfies your "out of discipline" (OOD) requirement
- Suggested time for identifying a client project: September 26.
 - The faster you do so, the more time you have to work on the project.





Professionalism Part

WHAT ABOUT THE

- Identified lack of certain essential skills:
 - Resume writing
 - Oral communications / interviewing
 - Lifelong learning
 - Ethical and professional judgment
 - Financial literacy

• We will have dedicated discussions on these topics





- Which of these acronyms do you recognize?
 - NDA, IP, PTO, LLC, S-Corp, NCC, IRA, PE, SOW, BOM, CV, 401K/403A/403B/457
 - Quietly raise your hand for each of these you know
- How many resumes do you currently have?
- How much should you save to be able to retire when you are 65?
- What would you do if you discover a design flaw in your company's latest product, but raising the alarm bell will get you fired?
 - How about getting an offer from a company whose business practices / culture / values you despise, after months of being unemployed with your dependents' well-being at risk?
- How would you answer the interview questions:
 - "Tell me about yourself," or "What is your greatness weakness/strength?" or "Why should we hire you?"
 - How many windows are there in Istanbul?



....BUT FIRST

LET'S START WITH RESUMES

An interview is what gets you the job, but a good resume is what gets you the interview.

- For each position, it is not unusual for employers to receive hundreds of applications
- How will you make sure that yours will be chosen for the interview?
- Remember that in many cases, the resumes are pre-filters by automated algorithms (bots!)
- A good resume is simple, professional, factual and responds to the specific position description
- A good resume includes
 - Key skills
 - Qualifications
 - Projects/ experiences
 - Education

FIRST LAST

New York, NY | P: +44 123456789 | first.last@resumeworded.com

EDUCATION

RESUME WORDED UNIVERSITY	Boston, MA
Bachelor of Science	
Major in Electrical Engineering	Expected May 2022
Cumulative GPA: 3.93/4.0; Dean's List 2015-2016	
Relevant Coursework: Electrical Engineering, Digital Electronics, Logic Design, Power System Analysis	
DUBLIN CITY UNIVERSITY	New York, NY
Study Abroad Program in Electrical Engineering	Jul 2018 - Jul 2019

WORK EXPERIENCE

RESUME WORDED & CO. (8-employee venture-backed recruitment startup)	New York, NY
Electrical Engineer Intern	Jun 2021 – Sep 2021
· Performed analysis on product performance, provided recommendations that improved product product	performance by 10%.
 Assisted two engineers in developing engineering solutions, which reduced company costs by 15% 	0.
 Ran weekly tests and validity checks on data, equipment, and software, reducing error rates by 129 	/0.
GROWTHSI	New York, NY
Electrical Project Engineer Intern	Jun 2020 - Sep 2020
· Worked with 3 senior electrical engineers to design PV systems that converted sunlight into electr	icity, reduced costs by 45%.
· Designed and sized solar PV systems for over 30 customers using AutoCAD to generate detailed	computer drawings.
· Conducted efficiency and price comparisons, provided recommendations that increased efficiency	by 15% and cut costs by
25%.	

VOLUNTEERING & UNIVERSITY PROJECTS

COMMUNITY PROJECT

Feb	2020

• Installed 20+ solar panels on 20+ local homes and businesses, reducing electrical costs by 30% • Ran diagnostics on 5+ businesses and provided recommendations that improved electrical efficiency by 15%.

ELECTRICAL ENGINEERING PROJECT

Jan 2020 • Researched and designed a solar-based swimming pool heating system. Presented to 6 college board members that approved the plan and cut amenity electrical costs by 20%.

ACTIVITIES

RESUME WORDED ELECTRICAL ENGINEER SOCIETY Head of Events	Boston, MA Sep 2020 – Present
 Founded the first-ever Electrical Engineering Series to organize hands-on training for 200+ students Organized and advertised 5+ quarterly networking events with 200+ participants, securing jobs for 60% 	of attendees.
ELECTRICAL ENGINEER CLUB	Boston, MA
Committee Member	Jan 2020 – Present
 Designed RFID-based prepaid energy meter with a team of 10 that the university uses today. 	

ADDITIONAL

Technical Skills: Energy Efficiency, C++, Microsoft Access, Electrical Design, Power Systems Languages: Fluent in French, English; Conversational Proficiency in Italian, German Certifications & Training: Online Course in Project Management (Coursera), Passed Resume Worded examinations

https://resumeworded.com/electrical-engineer-resume-examples





- The following are examples of actual resumes submitted for this class, used here with permission.
- The identity of the individual is hidden (to the best of my ability), unless the individual gave me specific permission to do so.
 - Any identifying information left is unintentional and is due to the content of the resume.
- My comments are intended to help everyone prepare a better, more professional looking resume.
 - These comments should be taken as personal criticism.









Poorly written, does not provide much actionable information Possibly irrelevant depending on the job you are applying Too much volunteer information and not enough technical project / skills / irrelevant / unnecessary Not distinguishing skills for Rowan University Irrelevant / unnecessary



Big mistake Potential problem Warning Point of information Well done!

EDUCATION

BSE Electrical and Computer Engineering, Rowan University – Glassboro, NJ
 Minor: Comp Sci, Data Sci; Class of 2025; GPA 3.89

SKILLS

- Programming languages: Python, SQL, C/C++, MATLAB, JavaScript
- Machine learning: PyTorch, TensorFlow, Keras, GANs, classification, regression, object detection, YOLO, explainable AI, sentiment analysis
- Data science: data cleaning, normalization, databases, web scraping, statistics
- Data visualization: Tableau, OpenRefine, D3, Power BI
- Cloud services: Azure, AWS, cloud security
- Automation: Microsoft Power Automate

RELEVANT COURSEWORK

Cybersecurity Fundamentals & Database Systems & Reinforcement Learning & Info Visualization & Data Mining & Prob & Stat for ECE & Discrete Math & Data Structures & Algorithms & Computer Laboratory Techniques & Machine Learning & Generative AI & Embedded Software & Computer Architecture & Digital Signal Processing

WORK EXPERIENCE

Delmarva Power & Light, Intern – Distribution Standards, (06/2024) - (08/2024)

- Wrote an updated booklet on standard upgrade policy for engineering designers regarding Distribution worksites
- Assisted with developing text detection AI models in Azure for extracting data from equipment
 evaluation forms
- Rowan University, Undergraduate Research Assistant, (06/2023) (07/2024)
 - Performed data analysis on electrical outages in Python, solely authoring programs for relative risk evaluation of 10 different natural hazards
- Assisted in the NJ State Energy Security Plan project to recommend emergency preparedness and risk
 mitigation strategies for a government audience
- Analyzed and integrated data from over 25 states' energy assurance plans to formulate a risk assessment model, ranking threats to NJ's infrastructure

PROJECTS

- Data Driven Analysis of the Jewelry Industry, Metalsmith Magazine, (04/2024) (06/2024)
- Researched and authored two articles on data-driven analysis of the art jewelry and commercial jewelry industries
- Used Python to pull and analyze data from web sources such as Google Trends and social media
- Developed conclusions based on data and presented them in the context of social, economic, and political factors for a non-technical audience

PROFESSIONAL SOCIETIES

Institute of Electrical and Electronics Engineers & Society of Women Engineers & Tau Beta Pi (Engineering Honors Society) & Pi Mu Epsilon (Math Honors Society)

AWARDS IEEE PES Scholar 2023 �

IEEE PES Scholar 2024

Robi Polikar Rowan does not award a degree called "BSE" Robi Polikar Spell out Robi Polikar Good to put skills up top. Make sure to update it based on the qualifications needed for each position Robi Polikar Great if you are comfortable with all of these. If not, do not lie! Perhaps. you can provide a relative scale for each indicating your level of knowledge / expertise in each Robi Polikar These are weak verbs, they do not convey confidence and expertise. Robi Polikar These are better as power verbs, they project an image of confidence expertise, can do attitude. Robi Polikar Use "published" Robi Polikar IEEE no longer stands for this. It is simply IEEE. Robi Polikar

...but should indicate what the award is for. Also indicate national nature of

the award

SOME EXAMPLES



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Potential problem

Point of information

Big mistake

Warning

Well done!

ROMAN CR

Big mistake Potential problem Warning Point of information Well done!

Jacob Drennen

Secret Security Clearance (Active)

1024 W. Somerdale Rd, Somerdale, NJ [856-449-8902] JakeDren0526@gmail.com

EDUCATION

EXPECTED GRADUATION DATE: MAY 2025

Rowan University Major: Electrical and Computer Engineering

GPA: 3.55

Honors: Dean's List

Relevant Coursework: Engineering Clinic, Intro to IOT, Principles of Circuit Analysis, Computer Architecture, Signals and Systems, Embedded Systems, Electronics 1, Digital Signal Processing

WORK AND PROJECT RELATED EXPERIENCE June 2024 - Current

System Engineer Co-Op Lockheed Martin, Camden, NJ

- · Leverage Python create graphical user interface for generating simulation runs
- Performed data analysis to determine outcomes for simulated events via MATLAB
- Collaborated with peers on radar analysis simulation

May 2023 - August 2023

Electrical Engineering Intern Novelis, Clayton, NJ

- Responsible for cataloguing and updating electrical drawings utilizing AutoCAD.
- Developed and documented programmable logic circuits leveraging AutoCAD.
- Implemented efficiencies in logistics process by leveraging third party-contracts to improve safety metrics in the warehouse.

SPRING 2021-SPRING 2023

ROWAN UNIVERSITY PROJECTS

- Embedded Systems Course Project, Spring 2023
 - Developed a system to test water clarity leveraging I2C and ADC to determine purity of drinking water.
- Computer Architecture Course Project, Fall 2022
 O Designed and built a 32-bit processor that leveraged bit wise operators to perform
- mathematic functions using Verilog.
 Digital Systems Course Project, Spring 2021
 - Designed and built a 32-bit processor that leveraged bit wise operators to perform mathematic functions using Verilog.

ACTIVITIES

Member, IEEE, Rowan University Student Branch SEPTEMBER 2019 - June 2021 First Robotics Competition Team, Camden County Technical High School, Sicklerville, NJ

SKILLS

.

Python, Verilog, C/C++, PCB Design Software, PSPICE, AutoCAD, Test Equipment Hardware, MATLAB, Office 365, MS Project, Project Management



SOME EXAMPLES





Summary of Qualifications Outstanding leadership, teamwork, and communication skills. ٠ Ability to learn new skills quickly and efficiently. · Strong research and information gathering capabilities. Education Bachelor of Science, Electrical and Computer Engineering Anticipated Dec 2025 Rowan University, Glassboro, NJ GPA 3.93, President's Scholar Fall '23, Dean's List Spring '24, Fall '25 Transfer Trustee Scholarship 2023, 2024 Associate of Science, Engineering Science May 2023 Camden County College, Blackwood, NJ GPA 3.7. Honors. Permanent Dean's List Engineering Projects Junior Engineering Clinic: Continual Learning May 2024 - Dec 2025 Served as project manager of research team, analyzed several continual learning and interpretability algorithms, combined both algorithms into a novel continual learning interpretability algorithm, and analyzed effect of backdoor poisoning attack on continual learning algorithms using novel interpretability algorithm Sophomore Engineering Clinic: Drone Design Jan 2024 - May 2024 Worked in a multidisciplinary team, researched various drone designs, designed drone frame and propellors, proposed innovative use of drones for social good, and assembled small-scale drone. Sophomore Engineering Clinic: Autonomous Car Sept 2023 - Dec 2023 Worked in a multidisciplinary team, tested various rubber materials, designed tire treads, and designed Arduino-based autonomous movement for a small-scale self-driving vehicle. Skills Programming Languages: C++, Arduino, Verilog, and Python Software: Microsoft Office, MATLAB, Onshape, and Intel Quartus Prime **Professional Societies** Phi Theta Kappa Tau Sigma National Honor Society Golden Key National Honor Society Tau Beta Pi Achievements Camden County College Program Excellence Award in Engineering Science May 2023 • • William G Rohrer Charitable Foundation Transfer Scholarship May 2023 • Camden County College Honors Program Transfer Scholarship May 2023 Chatman-Smith Memorial Scholarship May 2023 ٠ Lenora DiGiacobbe Memorial Scholarship April 2022 • Work Experience IT Support and Data Management July 1, 2021-Current Samlin Consulting, Blackwood, NJ

Robi Polikar Sounds like bragging with no proof. Use technical qualifications / skills instead Robi Polikar Good to include these Robi Polikar No one knows what these mean. Robi Polikar Too much detail, most hiring managers will not be able to follow this level of detail. Save it for interviews. Robi Polikar strong / power verbs Robi Polikar Weak verbs Robi Polikar Not a marketable skill anymore (certainly not for engineers). Robi Polikar Explain what these societies focus on Rowan University Robi Polikar Should be listed earlier and with more detail / content

COMMON MISTAKES IN RESUMES

- Having only a few or just one (gulp!) resume(s)
 - ^a Submitting an identical resume to more than one position
- Resume not including key terms from the job posting or position description
 - Not using power (or action) words (developed, designed, performed, improved, supervised, etc.), and using weasel or buzzwords or cliché words (worked on, researched, responsible for, team player, fast learner, hard worker, etc.,)
- Typos, awkward sentences, grammatical mistakes, incorrect contact information
 - " Use only firstname.lastname@provider.com/edu/org, or just lastname@provider.com/edu/org
 - Do not use cryptic or even amusing addresses: ajcxyy24@gmail.com; jedimaster@fargalaxy.com; I.am.the.best.for.this.job@hireme.com
- Listing hobbies or irrelevant experiences
 - Do not list unrelated jobs (such as working at McDonalds), irrelevant volunteer activities, hobbies, high school information
 - Volunteer / outreach activities that relate to job description are fine.
- Listing all / too many classes you have taken, or other non-distinguishing skills
 - Calculus, Circuits, Electronics, Office / Google Suite are concepts every ECE graduate knows. These are not discriminating skills / abilities.
- Using jargons, acronyms, not defining acronyms
- Using terms a recruiter, headhunter, hiring manager or a bot would not understand
 - " How many of you have "clinics" mentioned in your resumes?
- Starting with overly flowery "career objectives" or cliché statements (instead use "Key Skills & Abilities")
- Not enough technical detail or too much technical detail
- Unprofessional look and feel; too many colors; too crowded or too sparse, using multiple fonts, using graphics



FIRST LAST

New York, NY | P: +44 123456789 | first.last@resumeworded.com

• Performed analysis on product performance, provided recommendations that improved product performance by 10%.

Worked with 3 senior electrical engineers to design PV systems that converted sunlight into electricity, reduced costs by 45%.

· Conducted efficiency and price comparisons, provided recommendations that increased efficiency by 15% and cut costs by

• Researched and designed a solar-based swimming pool heating system. Presented to 6 college board members that approved

• Designed and sized solar PV systems for over 30 customers using AutoCAD to generate detailed computer drawings.

Assisted two engineers in developing engineering solutions, which reduced company costs by 15%.

• Ran weekly tests and validity checks on data, equipment, and software, reducing error rates by 12%.

• Installed 20+ solar panels on 20+ local homes and businesses, reducing electrical costs by 30%.

• Ran diagnostics on 5+ businesses and provided recommendations that improved electrical efficiency by 15%.

John Smith

(1) GENERAL SKILLS

Commercial Power Systems echnical Conference (2019)

Institute of Electrical and Electronics Engineers

INTERESTS

A Renewable Energy

Meditation

certificate • Tucson, AZ.

https://novoresume.com/career-blog/electrical-engineer-resume-example

- NGI

in linkedin.com/in/john.smith

Dedicated electrical engineer with 8 years of experience designing, testing, and implementing industrial installations. Skilled in AutoCAD, LabVIEW development, and circuit desian. Uparaded several installations bu finding out various transmission line faults, minimizing upkeep time by 40%.

B WORK EXPERIENCE

Electrical Engineer

Ness Engineering Inc.

- Upgraded and maintained over 20 clients' installations by finding out transmission line faults using AutoCAD, minimizing upkeep time by
 - Designed linear circuits using complex analysis, increasing production efficiency by 25%.
- Performed a variety of engineering tasks using computer-assisted design and software
- Communicated with customers and other engineers to discuss the design and implementation of engineering projects that meet company standards.
- Ensured that design, construction, installation, or upkeep of products complies with customer requirements and specifications.

Electrical Engineer

Spark Power Corp.

- Gathered and analyzed complex data regarding existing and potential electrical engineering projects and studies to write and compile reports
- Designed and tested electrical circuits for industrial purposes.
- Worked with a variety of technicians across departments to ensure compliance with customer needs and requirements.
- Supervised and trained project team members.

Bachelor of Science in Electrical Engineering University of Colorado Boulder

Certified LabVIEW Developer (valid until 11/2024) C National Instruments Corporation

Certified Systems Engineering Professional (valid until 06/2023)

N novoresume.com

First Last

Entry Level Electrical Engineer

WORK EXPERIENCE

Resume Worded, New York, NY

- Entry Level Electrical Engineer 01/2015 - Present Assisted in designing electrical systems for 20+ residential construction projects, leading to an 18.5% reduction in monthly
- energy consumption. Collaborated with a 10-person team to create a new circuit board
- layout that increased operational efficiency and reduced \$7300+ in quarterly production costs. · Partnered with cross-functional units to troubleshoot and resolve electrical equipment issues, decreasing downtime by 97%.
- Conducted comprehensive testing and analysis of power distribution systems, ensuring 100% compliance with industry standards

Growthsi, San Francisco, CA

Power Systems Engineer (Intern)

- Partnered with a team of senior engineers in executing a major substation upgrade project, reducing downtime by 70+ minutes and improving system reliability by 44%.
- Conducted detailed power flow and fault analysis to identify and resolve voltage and stability issues, which boosted system performance by 73% in the first year.

VOLUNTEERING ACTIVITIES AND EXTRACURRICULARS

Resume Worded's Business Society, New York, NY Welding Supervisor

- Recommended procedures that improved welding safety for RWBS at 120+ construction sites across Europe.
- · Worked on installing water mains using high-strength, low-alloy steel structures for 50+ companies throughout the US.

PROJECTS

https://resumeworded.com/electrical-engineer-resume-examples

Optimizing Solar Energy for Corporate Use 05/2009

- · Examined the efficiency of 20+ solar-powered charging stations and wind turbine generators.
- · Designed an automated system to reduce energy usage in a corporate setting by 200W annually.

A Review of Wireless Sensors & Amplifiers

- Researched a project to deploy a wireless sensor network to observe air quality, noise levels, and 20+ other environmental parameters.
- 92% below high-quality sound reproduction.

CONTACT Topeka, KS (Open to Remote) · +1-234-456-789

linkedin.com/in/usemame · github.com/resumeworded SKILLS Hard Skills:

email@resumeworded.com

Programming

Control Systems Design Electromagnetic Field Analysis Tools:

· SPICE Simulink Spectrum Analyzer

Multimeter

Don't forget to use Resume Worded to scan your resume

proven to get you more jobs)

Resume Worded University Bachelor of Science

Awards: Resume Worded Teaching

OTHER

- Professional Engineer (PE) 2022

04/2009

- Critiqued the construction of a digital audio amplifier that produced

Relevant Coursework: Electrical Engineering, Digital Electronics, Logic Design, Power System Analysis DUBLIN CITY UNIVERSITY Study Abroad Program in Electrical Engineering WORK EXPERIENCE **RESUME WORDED & CO.** (8-employee venture-backed recruitment startup)

EDUCATION

Bachelor of Science

RESUME WORDED UNIVERSITY

Cumulative GPA: 3.93/4.0; Dean's List 2015-2016

Major in Electrical Engineering

Electrical Engineer Intern

Electrical Project Engineer Intern

COMMUNITY PROJECT

VOLUNTEERING & UNIVERSITY PROJECTS

ELECTRICAL ENGINEERING PROJECT

ELECTRICAL ENGINEER CLUB

the plan and cut amenity electrical costs by 20%.

RESUME WORDED ELECTRICAL ENGINEER SOCIETY

GROWTHSI

25%

ACTIVITIES

Head of Events

https://resumeworded.com/electrical-engineer-resume-examples before you send it off (it's free and

List 2012 (Top 10%)

https://resumegenius.com/blog/resume-help/bad-resume-examples

Certified Energy Manager (CEM) · Certified Electrical Safety Compliance Professional (CESCP)

Committee Member · Designed RFID-based prepaid energy meter with a team of 10 that the university uses today.

ADDITIONAL

Technical Skills: Energy Efficiency, C++, Microsoft Access, Electrical Design, Power Systems Languages: Fluent in French, English; Conversational Proficiency in Italian, German

· Founded the first-ever Electrical Engineering Series to organize hands-on training for 200+ students

Certifications & Training: Online Course in Project Management (Coursera), Passed Resume Worded examinations

• Organized and advertised 5+ quarterly networking events with 200+ participants, securing jobs for 60% of attendees.



Boston, MA

Expected May 2022

New York, NY

New York, NY

New York, NY

Feb 2020

Jan 2020

Boston, MA

Boston, MA Jan 2020 - Present

Sep 2020 - Present

Jun 2020 - Sep 2020

Jun 2021 - Sep 2021

Jul 2018 - Jul 2019

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06/2009 - 04/2010 EDUCATION

06/2010 - 12/2014



PROFILE

Sales Maestro with more than 10 years experience in retail environments. Recognized for my ability to close deals, provide excellent custo service, and generate cold hard cash. Hire me to boost your company and get the job done.

CONTACT

PHONE 678-555-0103

EMAIL: TheHamMan@hotmail.com

HOBBIES

Jiu-jitsu Philosophy

Dugo 📄 Sales \$\$ HAM DUGO

Sales Associate

EDUCATION

University of Phoenix – Tempe, AZ Graduated 2008 AS in Business Administration President of Jiu-jitsu Club

WORK EXPERIENCE

Walmart Sales Associat 2015-Present -Help like 50 customers per day by answering questions and helping them find products -Recommended advanced merchandise display techniques to management, which were implemented and resulted in better sales -Close roughly \$500 in sales every week -Named "Employee of the Month" 4 separate times

ZARA Sales Associate

2008-2015 -Stocked and organized inventory with accuracy and efficiency -Personally broke state-wide records for the number of bootcut jeans

-On average, sold more than \$1,500 in merchandise each week -Once convinced a Chechen businessman to buy our entire collection of button up shirts

SKILLS



(OBVIOUSLY) BAD EXAMPLES

200 H Street, Washington, D.C.

charlie·foghorn@gmail·com (203) 451-2216

Charles Foghorn

EXPERIENCE

Reporter at McClatchy Washington Bureau, Washington, D.C.

September 2018 - August 2020

- Pitched and wrote weekly stories for McClatchy's national newspapers, the Miami Herald in particular
- Reported on 2018 congressional races, as well as Senate hearings
- Assisted lead editors with short and long-term economic research

Organizer at Orange County Democratic Committee, Orange County, CA

June 2017 - August 2018

- Used NGP VAN to update voter profiles, pull voter registration lists, and track contribution
- Planned and prepped for grassroots events aimed at recruiting new members from more than 100 precincts.
- Ran voter registration drives, having received voter registration certification in Virginia

ABOUT ME

Vegan, thrill-seeking single dad of two beautiful children, ages 10 and 13. Looking to expand my horizons through full-time employment with a flexible schedule that accommodates my morning mindfulness and goalsetting routine. Born hustler and big believer in the transformative power of meditation. #StavHumble #ProudDad

CONTACT

EMAIL: partyhardy75@hotmail.com

ADDRESS: 285 Wheeler Ave. Jacksonville, FL 32210

BIRTHDAY: July 17, 1978

MARITAL STATUS: Single

https://resumegenius.com/blog/resume-help/bad-resume-examples

Rachel Maxwell

RESUME SUMMARY

College graduate with internship experience. Seeking to leverage acquired academic knowledge and work experience into effectively filling your office clerk position. A dedicated worker aiming to help achieve company goals and take on more responsibility as quickly as possible.

(212) 657-8934

rachel.maxwell@gmail.com

linkedin.com/in/rachelmaxwell/

PROFESSIONAL EXPERIENCE

February 2018 – Present | Western Digital Inc., New York, NY Office Clerk Intern

- Perform document scanning (100+/day) and log them in the company's proprietary computer system for future review by internal departments, as well as the company's international offices
- · Typing and distributing confidential letters for senior members daily
- · Lead internship team of 8 in developing new inventory filing system
- · Respond to more than 15 client emails daily (on average), quickly resolving issues as they arise
- Worked with management to optimize the storage process for regulatory
- documentation, saving the department several hours per week

- EDUCATION May 2017 University of California, Berkeley Berkeley, CA M.S., Marketing
 - May 2012 University of California, LA Los Angeles, CA
 - B.A., Economics

Rowan University

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PHONE: 274-038-1937

Online political debates

on Main Street

Yoga Instructor - Mystik

July 2017 - August 2017

program to the bakery

and organized studio

- Vegan baking

Held private yoga sessions for VIP clients

· Worked both front and back of house in a vegan bakery

Introduced a successful waste-reduction and composting

Led personalized classes with focuses on stress relief

Worked closely with other instructors to maintain a clean

SKILLS & HOBBIES

and introduction to meditation

Reiki Level 2 practitioner

- Making people laugh
- Poker



TOP 5 RESUME MISTAKES

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Getting Ready

- Make a formal list of your skills
- Identify which ones are technical / engineering skills
- Organize them with respect to how common or specialized those skills may be
- Identify potential clients for each
- Update your Resume
- Prepare your LinkedIn Profile



Assignment 1:

PROJECT APPROVAL FORM

Complete and submit the <u>P&C Project Approval Form.</u>

- Please provide as much detail as possible for
 - Narrative Description / Scope of the Work,
 - Requirements / Specifications,
 - Constraints
 - Deliverables, and
 - Budget & Resources.
- Provide the dates for
 - project initiation,
 - ordering the supplies/equipment,
 - preliminary prototype/solution.
- Make sure to sign and obtain the Client's signature on the left side, under Project Initiation.
- Attach a Gantt chart. Lack of Gantt chart will lead to loss of points!

Read the additional information on Assignment 1 on Canvas.



ROAD MAP: WHEN WE COME BACK

- February 3: Mastering Interview Skills
 - Are you *really* ready for an interview?
- Mock interviews need volunteers
- If you would like to participate in a mock interview:
 - Let me know that you would like to participate
 - Send me an updated resume by Friday
 - Send me a position description / job ad to which you are applying by Friday
 - Come to class next Monday ready for the interview (in business formal attire)
 - Full disclosure
 - Be ready for honest and frank comments and feedback (in criticism or in praise) provided publicly.
 - Benefits:
 - You will get instant feedback
 - A great test run if you are preparing for an interview soon
 - I will meet with you again later (privately) to coach you and help you prepare for future interviews.

