



What Can I Do with a ChemE Degree? My Story- Your Plan



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Presented by

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Chemical engineering is a portal- a doorway, and entrance, a gate, ... to a just about anywhere you want to go

I hope to demonstrate this through sharing my personal story and insights

And as a result, I hope to inspire and practically to help you find your own path



ChemE 301 Leadership Seminar

- Forum for industrial, academic, and government leaders to share their experiences and insights with students.
- Includes topics related to leadership in the chemical engineering profession including career planning, management skills, interpersonal skills, effective planning, entrepreneurship, ethics, and strategic decisions.
- Credit no credit only.

What possessed you
to take this class?

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1. FLIPCHART OR WHITE BOARD AND CAPTURE LEARNING GOALS. BEGIN WITH THOSE THAT WERE PRESENTED TO ME UP FRONT:

- How one acquires industry specific knowledge after leaving school with a broad ChemE education. How did you do it?
- How teamwork, meeting deadlines, and delivering what you promise impact success. Please include specific examples.
- Illustrate the spectrum of ethical issues you may have faced, such as dealing with trade secrets, information that may impact company stock, and cost-cutting measures that might affect environmental health or safety.
- The critical role of effective oral and written communication.

2. INTRODUCTORY COMMENTS

What possessed you to take this class?

- I need an easy credit
- My advisor told me to
- I certainly don't have to get up too early
- I'm curious about...
- I want to figure out...

Let's break down the course description....

This class is about experience and insight

- I'll share a bit of both.... I'll tell you my story...

Focus is on LEADERSHIP IN THE CHEMICAL ENGINEERING PROFESSION

- A comment about leadership- a big topic- how does it relate to you? One way to think about it is that in the workforce, your performance (which drives what you get to do and how much you get paid) is rated in two ways- on your technical skills and contributions, and on your leadership competencies. The two go hand in hand to making good things happen.



So, What Can I do with A ChemE Degree?

Today's Dialog

🍷 My story

🍷 Life lessons

🍷 Planning matters

And a challenge-
Experiment!

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COMMENTS

So here's today's game plan

It's a dialog- a conversation, that I will moderate, in three parts

I'll give you my story, highlight some life lessons that I think you will find to be useful, then offer some planning techniques that can help you get on with your own plans

I challenge you to take away what is most meaningful to you and to experiment- as Chem E's say, "pilot it" and to make it yours.



Whose Plans?

“It takes courage to do what you want.
Other people have a lot of plans for you.”

Joseph Campbell

If you don't take away
anything else today, take
away this:
It's your plan.

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COMMENTS

Before we get started, I want to emphasize one point.

If you don't take away anything else today, take away this: It's your plan.

I'm going to tell you my story, and share my lessons, and (OK I won't be able to help it) give you a lot of advice.

An aside-

Most people genuinely want to help you.

Nobody wants to die without passing on their wisdom.

The thing is that people who are giving you advice are acting on their best knowledge of what you need.

(Particularly your parents!)

To derive value from this advice, you need to help people understand what you need, so they can help you get it.

So today, after telling you my story and advice, I want to support you in doing a little planning for yourselves.

My Story- Business Cards



President, Planning Matters LLC

◇ Strategic Planning for Social Impact



Vice President, Friends of Briar Bush Nature Center

◇ Education- Habitat - Conservation



Chair, Abington Township Shade Tree Commission

◇ Participation – Administration- Preservation

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COMMENTS

Let's get started with my story.
Currently, I carry three business cards

Planning Matters LLC

This is my company [with which I am among other things, putting my sons through college]
Core service is strategic planning for Nonprofits
This gives them the insight and guidance to
Align on Mission, Vision and Values
Identify and act on strategic priorities
Deliver meaningful and measurable impact

Friends of Briar Bush Nature Center

This is a volunteer position
Vice President of the board of directors of a nonprofit agency
It serves my passion for ensuring a greener future
It's also my test bed and playground for many things that I do in my business

Abington Township Shade Tree Commission

This also is a volunteer position, appointed by a governmental agency
It also serves my passion for ensuring a greener future
It enables my nonprofits service, in that you often need a partnership with nonprofit and government to get the job done

The three are synergistic, from which I derive and deliver value in a significantly greater way than the "sum of the parts"

Nothing in these cards tell you that I am a chemical engineer.

Today I would like to take you on my journey from UW ChemE to Planning Matters, Briar Bush and the Shade Tree Commission



My Story- Lenses

📌 Skills

- What skills or abilities were needed?
- Think broadly- technical, social, etc.

📌 Roles

- What role(s) did I play?
- And how did my role evolve?

📌 Industries

- In which industry was I serving?
- What was the nature of the problem?

Why was this a
Good Fit?

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FLIPCHART- SKILLS- ROLES-INDUSTRIES

Before we begin my journey, I would like to ask you to keep in mind three “lenses”
Different lenses enable you see different things
As Yogi Berra said, “You’d be surprised how much you can observe by watching.”

As we walk through these, let’s capture “SKILLS” “ROLE” and “INDUSTRY” recognizing that these need to be shaped and chosen based on what one wants from this opportunity



My Story- Inflection Points

5 of 8	Lost in space
College	Deeper learning
Marriage	Finding our place
Technical to Managerial	The W2 project
Children and Parents	Family Leave vs. Living
Wharton	Reformation
Community Connect	PTA and LASER
Research to Marketing	Team Traffic and IP
Chemical to Social Impact	Planning Matters LLC

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COMMENTS

Life is full of change, and the most interesting parts are the inflection points- where you leave one system and enter into another

I am sure you have studied inflection points in calculus, you know, where the slopes as well as many higher order things can change.

Professor Berg will be the first to tell you, whether it be colloids or “life”, it all happens at the interface- it’s the drama- and leadership comes to play a big part

I have chosen a few of my personal inflection points in order to illustrate some “leadership moments”

I’ll walk you through this quickly, then let’s go back and dialog according to your interests and observations.

5 of 8- middle child, not much in the way of friends, academics as my life boat AND basis for incredible people skills

College- BS ChemE UMR (small, old mining school); PhD UW (Interfacial group- took it to the next level and another coast)

Marriage- whether and whom and when to marry; quest for two jobs in one place; choosing Philadelphia as home

Technical to Managerial- process engineering; surprise promotion, crisis project; technical integrity; performance management

Children and parents- whether and when; deliberate restructuring; advocacy; care; letting go

Wharton- retooling, GMAT story; geopolitics; family engagement

Community Connect- tactical entry points leading to strategic impact

Research to Marketing- targets; aiming; intellectual property; the power of team

Chemical to Social Impact – transferrable skills; room to grow; lifestyle; making a difference (in a different way)



My Story- Living Happily Ever After

Family Matters

- ◇ My kids
- ◇ Think extended

World Views

- ◇ The Stanley Avenue Garden Club
- ◇ Jean Henry, "The First 90 Years"

Beyond Planning Matters LLC

Is it a good problem?
What will I learn?
Who will I get to play with?

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COMMENTS This brings my story to "today."

When it's all said and done, I believe that the most important thing is family. That's why I work, that's why I play. Life is about love. Above all things my husband and I agree that the best part of our lives have been in sharing in the lives of our two sons. And my path has enabled this.

I do want point out that family has many meanings, and to challenge you to "think extended." There are so many people on this planet who need and want "family" and you don't need to be a blood relatives to be part of a family. Think of "family" as a verb." and get rid of silly barriers. Remember to say "yes" as much as you can.

My path has enabled me to expand my world view in unimaginable ways.

- Professionally, Planning Matters is like taking a course in geopolitics each day. Enough said.
- Personally, the lifestyle that comes with independent consulting has brought me friends of all ages, and with this, incredible, powerful perspective. Among the most powerful are
 - my fellow gardeners, ages 3 through 12, who remind me, "Miss Rita, it's time to come out and play!" and
 - the goddess Jean Henry, who at 91 is composing music and living life, who has taught me, "You sometimes have to go to dark places, but you don't have to live there!"

Planning Matters is alive and well, and I'll leave you with the criteria by which it will evolve. In identifying or vetting any opportunity, I intend to keep asking three questions that have served me well:

- Is it a good problem?
- What will I learn?
- Who will I get a good to play with?

One of my greatest joys is in giving back and in doing so, I have found a way to earn a living.



Life Lessons

Technical

Transferrable skills
Choosing your work and building capacity

Personal

Knowing and trusting yourself
Connecting with people and opportunities
Everything is negotiable

Practice

Marketing yourself
Gaining experience

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COMMENTS

Moving onto part 2- I would like to select and discuss a few “Life Lessons”- themes that you might pull from my story that are relevant to you today.

I offer three categories- technical, personal and practical, each with a number of lessons

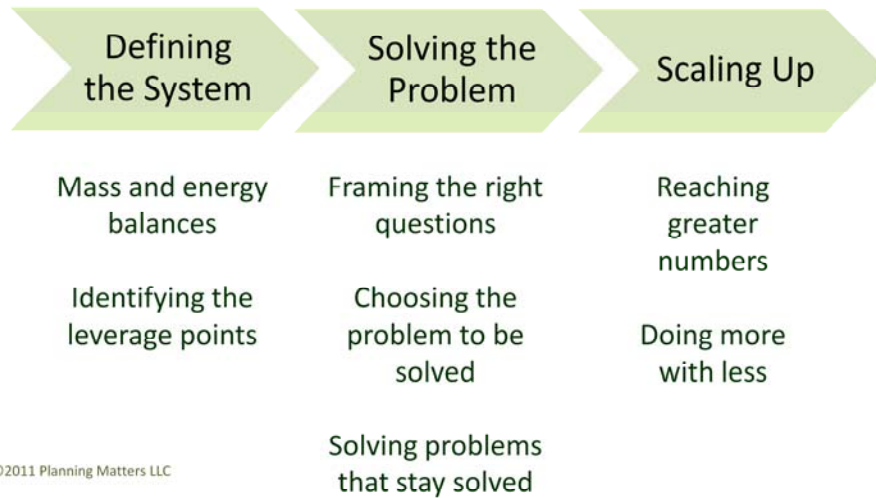
- Technical deals with the mechanics of building your skills and experience
- Personal deals with what many refer to as the “people side”
- Practice deals with connecting with opportunities

Let’s take a look at each, and talk about them guided by your interests and needs.



Technical Lesson 1

Transferrable Skills



COMMENTS

Let's start with "transferable skills." What are you learning in your ChemE education that can be applied immediately, regardless of the industry that you choose?

Engineers are experts in defining the system, solving problems and scaling up.

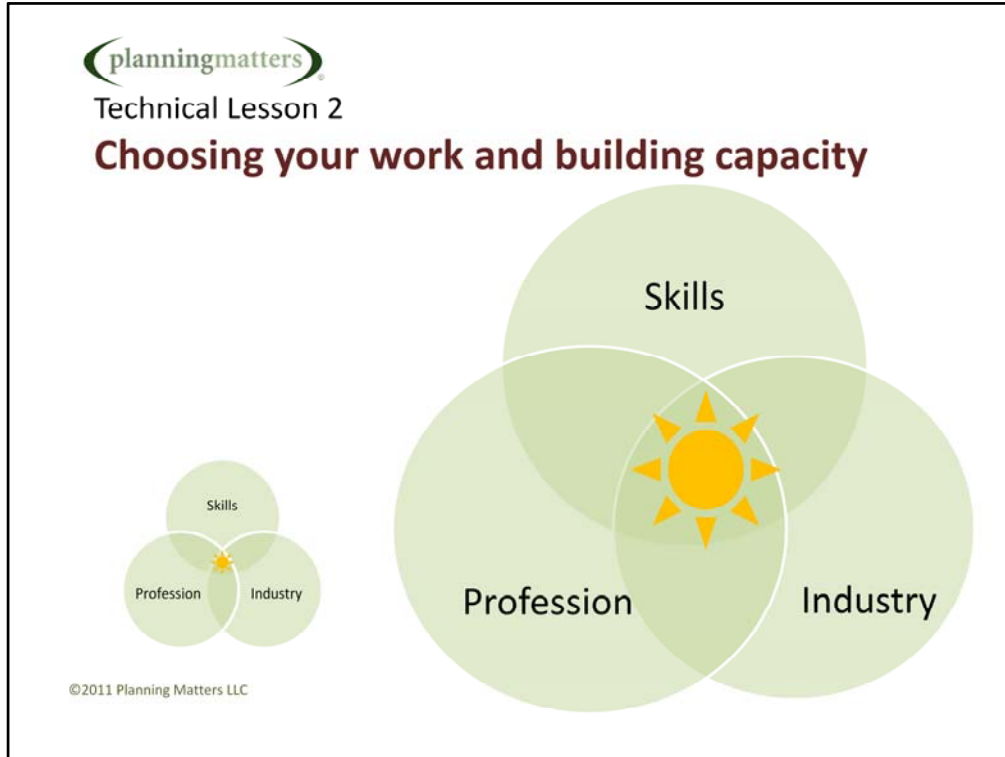
ChemE's almost always start with a mass and energy balance- they get their arms around the problem and get to know the big picture and constraints. What's going in, what's coming out, what's changing, and at least a hypothesis of your leverage points for controlling the system. You know this is the basis of defining a system, and you would be amazed at ho many people do not know how to do this- that is, define the system.

Engineers are great problem solvers. No matter what the situation, knowledge of the system enables one to frame the right questions, and therefore choose the problem that really needs to be solved. In many cases, this get you 80% to the solution. And because the problem is solved systematically, usually the problem "stays solved."

Finally, engineers are skilled in scaling up and all sorts of things need scaling. IN the social impact as well as just about any industry, the need is greater than ever to reach more and to do more with less. This is the stuff of efficient engineering scale-up.

You hear a lot in the news about innovation these days. Innovation is all about solving a problem with practical results.

That is the heart of engineering, and engineering skills can be applied to just about any type of problem.



COMMENTS

In choosing your path, think about three pieces and how they relate- your skills, your chosen profession or role- what you do; and the industry- the problems to be solved in a given cultural context

When you think about what to do with a chemical engineering degree, I ask you to think about it in three ways

1. What skills do you acquire as a chemical engineer that are being applied?
2. What role is being played?
3. In what industry are you serving- hence, what are the problems to be solved?

At the center of this is Leadership- it's where you choose what and how to bring these things together

As you gain experience, your capacity grows and so does your playing field, which is the intersection of skills, interests and abilities.



Personal Lesson 1

Knowing and Trusting Yourself



- Discover and stick to your **core values**
- they guide you in everything



- Develop a **personal vision**
“If you can see it you can be it!”
-this is at the heart of leadership



- It's a **lifelong learning** process
hit the trail!

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COMMENTS

Let's turn to think about personal lessons. I believe that the most important lesson is to get to know and to trust yourself. There are a lot of good ways to do things. But what is best for you?

Begin with discovering your core values. They will serve you well in making the hard decisions. Envision the future that you desire. Don't worry at this point if you don't know how to get there. Develop the vision and commit to it, and everything else will follow. Finally, realize that this is a lifelong process, with many chapters. Begin.

Tending to these three things will go a long way towards self knowledge and trust.



Personal Lesson 2

Connecting with People

- Be incredibly kind
- Network with curiosity
- Ask for what you need

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COMMENTS

You have heard the old saying “It’s now what you know, it who you know”

In successfully connecting with people, I believe that it’s all about Trust and Integrity
Kindness is the foundation
Curiosity is the spark

If you don’t ask, people generally don’t know what you need
Connect with people and opportunity follows

And you will find that all the dots begin to connect. And magic happens when the dots connect!



Personal Lesson 3

Everything is Negotiable

■ Above all, recognize this!

- It starts with personal vision
- It is enabled by personal relationship

■ Develop your negotiation skills

- Find the common ground
- Identify best alternatives from both perspectives
- Create the possibilities
- Go for win-win

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COMMENTS

Don't assume that you have to live with that which seems to be true.

"It's that way" often because of good reasons, but often, these are not essential reasons.

Test them and get to a better place for everybody.

Take a negotiations class and practice. Here are the essential steps involved...



Practice Lesson 1

Marketing Yourself

Develop and practice your “commercial”

- Who are you?
- What are you into?
- How you are making a difference and who is benefiting?
- What are you looking for?

Think to the future rather than to the past

- Lead with your “executive profile”- tailored to that which you are seeking
- Follow with your resume

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COMMENTS

Marketing Yourself: is the first of two “practice” lessons- things you can do to take the lead in creating your own story.

Think of the following three items as your basic marketing tool kit:

1. Your “commercial” is kind of like a calling card- helps you to engage with others in the few seconds in which they are deciding whether to spend time with you. It’s the hook.
2. Your profile tells someone where you want to go and what you bring to the table. Create your future by communicating those things that will open the doors to your future desires, rather than allowing others to “categorize you” based on your past. It’s really helpful to have this written down, then to extract pieces as you need them. For example, this is an incredibly useful “story board” from which to write introductory emails.
3. Your resume is your spec sheet- you will always need one, as this is kind of a quality control device for hiring managers. Keep one handy and up to date, but follow with this after you have marketed yourself.



Practice Lesson 2

Growing your Network and Experience

Formally network with one new person at least every week

- You don't know what you don't know
- It's all about who you know

Engage with your professors and fellow students

- Undergraduate research
- Team projects

Take a class, join a club or volunteer is a way that extends

- Learn to backpack, paint, plant a tree, etc.
- Engage with a local group that interests you
- Intern at a nonprofit

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COMMENTS

Networking is a life habit that helps you find what you need, and once you get the hang of it, is an awful lot of fun.

Networking is about connecting people and interests. It takes many forms, three of which I suggest here.

1. Formal networking- a pre-arranged conversation about a specific question.
2. Engaging with professors and students- a daily habit while you are a student
3. Class, club or volunteer in a way that extends- "You don't know what you don't know" and "you don't know how people might be able to help you."

REMEMBER-

- Networking is a two way street- giving and getting. Always ask how you might help another.
- Experience comes from many places.



Planning Matters- Run an Experiment

Prepare

Sketch out your personal profile
Choose 1 or 2 questions you want to answer

Network

Talk with 3 people about it

- Get out of your comfort zone
- Be sure to thank each person- be specific in how each helped you

Pilot

Act on one really good idea

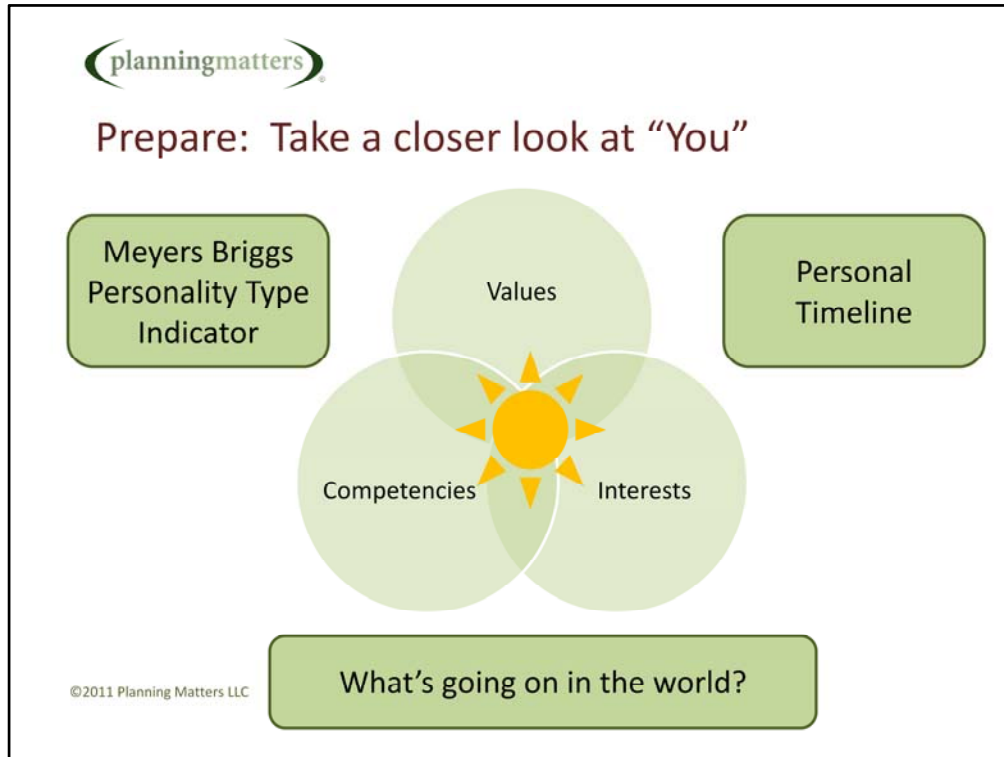
- Run the experiment
- Reflect on the results

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COMMENTS

Here is my challenge to you. Take what you have seen and heard today and run your own experiment.

This experiment can put you on a good path in creating your own story.



COMMENTS Good planning always begins with taking stock of where you are and what you want. Remember, "Whose plan is it?"

There are many good ways to take stock of yourself. Your career center is a great resource for this (Use it!) Saying this, however, is a bit like saying "It's on the web." Where do I start? Here are my personal favorites.

1. Get to know yourself. The MB personality type indicator (MBTI) is powerful. [How many of you have ever heard of this?] Based on Jungian psychology, each of us is born with distinct personality preferences: source of energy (E/I); take in information (N/S); make decisions (F/T); Lifestyle (P/J). Why not grow to understand these and choose life according to innate preferences?
2. Lay out a personal timeline
 - Look back and jot down your own story- then look for threads
 - Look forward and envision (rather than predict)- what do you anticipate might be your own inflection points?
 - What do you want and need to do to prepare?
 - Be sure to include finance (Favorite wedding quote from a Buddhist monk, "Live within your means")
3. What's going on in the world?
 - Keep a small notebook handy, and make a habit of jotting down anything that you encounter that invokes your curiosity- just enough to remember to think about it
 - What are the problems to be solved? What's getting in the way? How might you make a difference?
 - Where are there new solutions? How might you bring them to play in what you do or want to do?
4. Sketch out your "CIV" (Competencies Interests and Values)
 - Focus on where the three overlay
5. Choose one or two ideas you would like to test through networking



“Grow where you are planted.”



Mother Theresa

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COMMENTS

I'll close by sharing a quote that has guided me for decades. In Mother Theresa's words, "Grow where you are planted."

You can take this to mean many different things- that's what makes a great quote, well, GREAT!

My purpose in sharing it here is to encourage you to grow now. Don't wait for that "some day" to nurture or to figure out what you want. Tend to yourself now, and throughout your life, wherever you may be.

And you will create a great life.