Career Planning For Scientists:
Why Business Is Important To Your Future

M.D. Donaldson
MDD BioConsulting
Business Terms 101

- IRR
- ROI
- ROA
- DCF
- NPV
- SG&A
- PBT
- COC
- EBIT
- EBITDA
- P & L
Business Terms 101

- IRR : Internal Rate of Return
- ROI : Return on Investment
- ROA : Return on Assets
- DCF : Discounted Cash Flow
- NPV : Net Present Value
- SG&A : Sales
- PBT : Profit Before Tax
- COC : Cost of Capital
- EBIT : Earnings Before Interest and Tax
- EBITDA : Earnings Before Interest, Tax, Depreciation and Amortization
- P & L : Profit and Loss
Science Careers – You Have Many Good Options

- Industry: Research and Development
- Industry: Corporate/Business
- Government: Various
- Academia: Teaching
- Academia: Research
- Academia: Administrative
Career Development Goes Beyond Science Education

- Regardless of career path, basic Business training is complimentary to Science training
  - All businesses and organizations have real cost and profit expectations
  - Costs need to be prioritized and justified
  - ROI (Return on Investment) based technology initiatives
  - ROI based business initiatives
  - The end result or output must satisfy a real or perceived unmet need in the real world
  - Profit is ultimately a requirement to justify continued investment (University and Industry)

- To address these requirements and expectations, all science oriented students must have a firm understanding of basic business principles that allow them to fully contribute to any academic or commercial enterprise
Issue Definition

- Business skill training/awareness is not a normal part of the Science undergraduate curriculum (requirement or elective)

- Regardless of whether a career path is in academia or industry, Business knowledge is critical
  - Accounting
  - Finance
  - Economics
  - Marketing

- Career plans and paths CHANGE in the real world, especially in the sciences…you must all be prepared and proactive.
Critical Gap Analysis

The lack of awareness related to the importance of Business training for Scientists must be recognized and addressed:

- Faculty*
- Administrators*
- Students

An opportunity exists to address these gaps

- Targeted training and orientation of Science students in the area of Business disciplines
- Functional and operational academic infrastructure linkage (Business School/Sciences linkage)
Science + Business Training: Why?

- All enterprises have a need (and responsibility) to encourage and promote career advancement of all employees….scientists without business training are very difficult to promote throughout their career.

- Goals and objectives (strategic, financial and technical) start at the Corporate level and flow down to ALL employees (at least for successful companies…)

- Scientists who understand profit and productivity drivers are more targeted in their efforts and anticipate (along with Marketing) unmet customer needs.

- Businesses exist to make a PROFIT…everyone must contribute to the ultimate profit realization…mailroom to top executives.
Why Are Scientists Not Successful in Key Business Roles?

- Many business decisions are based on “gut” thinking, with limited facts.
- Biases can result from flawed hypotheses....force the facts to reach a bad decision.
- Technology discoveries can be intellectually interesting but there can be an inability to develop the ultimate “value proposition”.
- Lack of basic business knowledge results in failure to achieve Enterprise Goals and Objectives.
Why Are Scientists Successful in Key Business Roles?

- Logical thinking
  - If this, then that
  - Fact based

- Writing skills

- Communication skills (usually....)
  - Clarity
  - Precision

- Understanding Technology....why it works
What “Business Skills” Apply For Scientists?

- **Financial Skills/Awareness**
  - Profit and Loss (P&L) drivers
    - Revenue (unit X price)
    - Cost (all functional departments)
    - Net profit (what you take to the bank, more or less…)
  - Financial performance metrics
    - Profit per employee
    - New product contribution margins (profit enhancement or dilution)
    - Patents/IP….value added to the business vs. “intellectually interesting”
    - Manufacturing cost drivers (impacted by R&D discoveries)
  - Balance sheet
    - Assets (scientists like new stuff….)
    - Cash flow
What “Business Skills” Apply For Scientists?

- **Operational Skills/Awareness**
  - Business Development: Investment decision making
    - Technology Assessment
    - Discounted Cash Flow (DCF) analyses
    - Internal Rate of Return (IRR) analysis
    - Net Present Value (NPV) analysis
    - Business Model creation
  - Marketing
    - ALL Scientists need to understand basic Marketing concepts
      - Unmet Customer Needs
      - Value Proposition
      - Market and Customer Segmentation
      - Demand Creation
  - Manufacturing
    - R&D helps drive cost avoidance + cost reduction + product improvements
Case Study: Technical to Business Career Path

Career Path Evolution: Example

- M.S. Bacteriology and Biochemistry from University of Idaho… what now?
- Research Associate: WSU/Agronomy and Soils for 1 year….what now?
- Global Agricultural Company…Biological Research Scientist/Group Leader… applied applications for 9 years….what now?
- Fermentation Manufacturing: Development and Pilot Operations… first contact with Business side – 3 years
- Marketing/Business Management (Global Biologicals Business): major fork in the road – 4 years
- Business Director/Global General Manager: technical responsibility shifted entirely to Marketing, Sales and Business Management – 5 years
- Executive Leadership: Chief Operating Officer, President, Chief Executive Officer, Corporate Executive Officer… Linkage of all functional units to drive enterprise results and VISION – 14 years
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- Executive Management/Leadership: Chief Operating Officer, President, Chief Executive Officer, Corporate Executive Officer… Linkage of all functional units to drive enterprise results and VISION – 14 years
University of Idaho Initiative: “Business For Scientists”

- **Objective**: provide a sustainable curriculum that links students in the sciences with basic business principals

- Partnership between College of Business & Economics and College of Science

- Open to any student interested in the program

- **Business Areas of focus:**
  - Financial reporting and financial management
  - P&L management, including the role of basic functional units on profit and loss drivers
  - ROI based analysis for innovation & new product development decision making
  - Strategy and financial implications for launching new products and services
  - Evaluating external business environments, competitive analysis, and strategy formulation

- **Leverage existing and new University of Idaho resources**
  - Innovation Programs
  - Outside speaker invitations
  - Exposure and interaction between Business and Science students, to the benefit of both
  - Targeted curriculum co-developed by the Science and Business Schools
“Business For Scientists”: Key Success Factors

- Science students must **understand** the need for supplemental business training and utilize the resources offered.

- Science students must be **aware** of the opportunity to participate and take advantage of the training that is offered… **spread the word**!

- Program is open to ALL science students.

- Program must be sustainable and become a differentiating element for attending U of I as a science student.
  - Preparation for recruitment and job search
  - Career Development
Career Planning:

No one ever failed because of Competition…..they failed because they could not Compete