Engineering Branch Selection

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CIVIL ENGINEERING
The Exciting Choice
Outline of Presentation

- Introduction
- Employment Opportunities
- Course Details
- Discussion/Question Time
What do Civil Engineers do?

- Work on **BIG** projects
- **Always working directly with community**
- Provide water, food, shelter, safety
- Provide communication, transport, recreation, etc.
Major construction
e.g. CityLink
Major construction
e.g. Eastlink
Water supply, dams, spillways, flood management
Pipelines
Bridges
Grand Canyon Skywalk
Sports Stadia
Dubai’s Dynamic Tower

Yet another amazingly ambitious construction project has been launched for Dubai. At the Plaza Hotel in New York Dr David Fisher of Dynamic Group showed off the plans for the Dynamic Tower in Dubai. The $700 million project is an 80-story building where each floor rotates so that everyone gets a 360-degree view (the full rotation takes between one and three hours). The tower will have 10 full floor apartments in which the owner can control the rotation. The rest of the floors will include a luxury hotel.

Burj Dubai

Dubai (Khalifa) Tower

http://en.wikipedia.org/wiki/Burj_Dubai
Green Wall
Green Roof

http://egardens.blogspot.com/2009/03/green-roofs-more.html
Racing Circuits
Municipal Waste

Diagram of a landfill with various components labeled:
- Monitoring Wells: Water, Gas
- Soil covering daily additions of waste
- Solid waste
- To gas recovery system
- Protective clay cap
- To leachate treatment system
- Drainage Material
- Native Soil Foundation
- Compacted soil of low permeability
- Leachate collection and removal system
- Surface run-off diversion
- Leachate detection, collection, and removal system (LDCRS)
- Drain Pipe
- Protective Liners
- Leachate collection system sump
- Groundwater

Not drawn to scale
What are the main areas of Civil Engineering?

- Environmental Engineering
- Transport Engineering
- Water Engineering
- Geotechnical Engineering
- Structural Engineering
Some Civil Engineering Projects

- Sydney Opera House
- West Gate Bridge
- New Stand - MCG
- City Link, Eastlink
- Snowy Mountains Hydro Electric Scheme
- Channel Tunnel
- Panama Canal
- Many international projects
What skills do Civil Engineers need?

- MUST be multi-skilled
- Keep in mind the ‘big picture’
- Communication
- Management
- Creativity
- Common sense
Who employs Civil Engineers?

- Many Civil Engineers work in industry
- South East Asia loves our graduates - travel opportunities are common
- University graduates as researchers
Employment Prospects

- 97.8% employment rate *(The Age, 16 July 2008)*
- Median starting salary on graduation $58,000 pa *(2012 report)*
- Civil Department graduates approximately 100 students per year
Career prospects

- Monash – produced most CEO in Australia (The Age, 29 August 2012)

The universities that had educated the highest numbers of chief executives were the University of New South Wales and Monash University. The undergraduate degrees held by the business elite were most commonly in economics, business, and engineering...
Where do Civil Engineers Work?

- Big and small engineering consultants and construction companies: Leighton, John Holland, Arup, AECOM, One Steel
- Shell, Mobil, BHP Billiton, Rio Tinto
- RACV, VicRoads, DOI, EPA
- Melbourne Water, Eastern Energy
- Reebok, NASA
- Banks, Management consultants
- Universities – first class research at Monash
What is in our Course at Monash?

- Wide range of subjects to give you skills
- Transport, water, soils & structures
- Flexibility to study at your own pace
- Management stream
- Computing opportunities
- Site visits
Project Based Learning

Some Group Projects Undertaken in Civil Engineering

- construction and testing of a mini steel bridge
- laboratory work on soils
- concrete column fabrication and testing
- design of multi-storey car park
- design of highway bypass
- field trips: Studley Park, Warragal Treatment Plant
Laboratory work
Hands-on experience
Model structure construction
Vacation Work

- Need to complete 12 weeks practical experience before graduating
  - Recommended after 2\textsuperscript{nd} and 3\textsuperscript{rd} year
  - 12 weeks summer research (with scholarship) in the Department
  - Gain experience that assists in 4\textsuperscript{th} year
  - Further develop skills learnt in course
  - Possibility of gaining graduate employment
Research at Monash Civil: structures, water, transport, geotechnical

- Strengthening of Monash Freeway
- Bridge over Warrigal Road
- Biofiltration (vegetated soil-based media)
- Impact of in-vehicle navigation systems on travel
- CO₂ Sequestration
- Transport and land use interaction
Water resources...

- **Worldwide:**
  - More than 1 billion people do not have access to **safe drinking water**
  - More than 2.6 billion people lack adequate sanitation

- **Water resources** in many areas of Australia are either close to their sustainable yields or already over-committed
Biofilters

Porous Pavement Pre-Treatment System
New degree in 2013

- Mining Engineering
  - Common first year entry
Course experience questionnaire

- Completed by graduates 4 months after graduation

Questions:
1. Generic Skills Scale
2. Good Teaching Scale
3. Overall Satisfaction Scale
4. Measure - Grad Qualities Scale
NEWS!!

Free calculator to every Level 2 Civil student
Relevant  Innovative  Exciting
Employment

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Please Consider!
Why Civil Engineering?

- Unrestricted:
  - Water Systems
  - Geo
  - Transport
  - Structures
  - Project Management
  - Environmental

- Real Life Projects, Visible Outcomes
Why Civil Engineering?

- Hands on Degree – field trips, Construction, Tests and Models
- Can work anywhere.
- Have a real impact on communities around the world.
What’s the course/faculty like?

- Excellent Staff – Open door Policy
- Community feel through The Association of Civil Engineering Students and our Student Reps.
- A strong link to Industry through:
  - Industry funded research
  - Guest Industry Lectures
  - Industry Networking events
- New High-Tech Civil engineering home rooms
- Lots of Vacation Work Opportunities
Course Structure

- 1st Year: Structures only (this is only a small part of Civil Engineering)

- 2nd & 3rd Year: A combination of all disciplines

- 4th Year: Your choice of classes
  - Need to specialize in at least 2 disciplines (this keeps your future work options open)
  - Can choose 2 out-of-faculty classes (anything!)
  - Includes final year project and engineering practice
The Final Year

- FINAL YEAR PROJECT:
  - Full year project
  - Half Semester project

- CIVIL PRACTICE:
  - In groups of 4 – 5 people with one student from each discipline (Structures, Geotechnical, Water, Traffic and Environmental)
  - Design the project from the initial stages to the final construction stages.
  - Real world situation: e.g. 2011 Green Chemicals Futures Facility
Yarra Valley Water

- Largest of Melbourne’s water supply and sewerage service providers and are Government owned
- What I did?
  - Managed the design and construction of the project
John Holland – Major Contractor/Construction Firm – What I did?