1. Engineers’ Salary Survey
2. Design project (see Design Project Schedule on web)
3. Professionalism and Ethics (chapter 1.10 in book)
Engineering Salary Survey

Source: http://www.abbott-langer.com/asmesumm.html?pn02
Engineering Salary Survey

The median annual income reported in a recent survey (2004) of the compensation of mechanical engineers was $83,236, with the middle 50% falling between $62,000 and $100,000, according to Dr. Steven Langer, President of Abbott, Langer & Associates, Inc., Crete, IL.
The composite highest-income practitioner in this field (salary plus cash bonus and/or cash profit sharing) is the Research Vice President/Director with a median income of $135,000. Far toward the other end of the income spectrum, Junior Engineers have a median annual income of $50,000.
The median total cash compensation of some included in the 2002 survey report are:

<table>
<thead>
<tr>
<th>Position</th>
<th>Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presidents &quot;B&quot;</td>
<td>$130,500</td>
</tr>
<tr>
<td>Engr. Directors/Vice Presidents</td>
<td>$110,000</td>
</tr>
<tr>
<td>Professors</td>
<td>$106,700</td>
</tr>
<tr>
<td>Principal Consultants</td>
<td>$100,000</td>
</tr>
<tr>
<td>Environmental Managers</td>
<td>$96,990</td>
</tr>
<tr>
<td>Senior Engineers</td>
<td>$79,800</td>
</tr>
<tr>
<td>Sales Representatives</td>
<td>$74,000</td>
</tr>
</tbody>
</table>
Engineering Salary Survey, cont’d

Compensation varies considerably. Median incomes are highest for independent consultants ($99,500), and in financial organizations ($118,000), textile mill product manufacturing ($96,000), and petroleum/coal/natural gas extraction & refining firms ($95,000);
Median incomes are lowest in firms manufacturing home appliances ($63,000) and circuit boards ($63,500), printing firms ($63,800), and state government ($64,000).
When level of education is taken into account, mechanical engineers with a *doctoral degree* earn a median annual income of $93,750, 32% higher than those with a bachelor's degree ($70,950). Mechanical engineers with *under one year of experience* have a median income of $49,900, only about one-half that of the 25-plus-year veteran ($100,000).
Chapter 1.9
Engineering Education

Some personal observations:

• Observe market trends continuously. Internet job sites are an excellent resource.
• The highest demand is typically in new technologies (often the most interesting, but also the most challenging)
About Week 3 Lab Assignment:

Begin Literature Search

Your Sources:

• Library
• Web
• US Patent office
US Patent example:

United States Patent 6,491,566
Peters, et al.
December 10, 2002

‘Toy Robots’
Legally known as:
“Sets of toy robots adapted to act in concert, software and methods of playing with the same “
Toy robots are provided that act in concert with each other. A player issues high level team commands to a processor. The processor interprets the team command to derive individual low level commands for the toy robots. A transmitter transmits the low level commands to the toy robots, which then act in concert.
**Fig. 4**

1. **Observe Action of Opponent Toy Robot(s)**
2. **Input Status of Own Toy Robot(s)**
3. **Determine Plan to Counter the Observed Action**
4. **Issue Team Command to Effectuate the Plan**
   - **Encode Team Command in Master Signal**
   - **Transmit Master Signal to Master Toy Robot**
   - **Decode Master Signal to Reproduce Team Command**
Fig. 5

RECEIVE NEXT PAWN CONTROL SIGNAL

SIGNAL INTENDED FOR THIS PAWN TOY ROBOT?

NO

YES

DECODE RECEIVED PAWN CONTROL SIGNAL, TO REPRODUCE PAWN CONTROL INSTRUCTION

DETERMINE WHETHER PRESET PAWN STATUS CONDITION IS MET

TRANSMIT PAWN STATUS SIGNAL (REPORT STATUS CONDITION)

NOT MET

MET

EXECUTE PRESET ACTION ROUTINE

OVERRIDE REPRODUCED INSTRUCTION

YES
What can we learn?

Creativity?

New Ideas?
Conclusion

Patents are an excellent resource for assessing the state of the art, and for generating new ideas.
Lab Assignment:
Begin Literature Search

Your Sources:
• Library: Visit the UNLV Library. The library has an on-line catalog. See: http://www.library.unlv.edu/
• Web
• US Patent office
Lab Assignment:
Begin Literature Search

Your Sources:
• Library

• Web
  Use search engines such as Google.
  Also use Image search options
• US Patent office
A final remark:

**Motivation:** Study patents and literature for your own benefit. You will come up with new ideas. Knowledge will make you an expert, and will let you enjoy the project a lot more.
Chapter 1.10 Professionalism

Professional Registration
NEVADA STATE BOARD
OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS
1755 East Plumb Lane, Suite 135, Reno, Nevada 89502
(775) 688-1231    1-800-728-2632 (In Nevada only)

Application for Professional Engineer Licensure

(Discipline) ..........................................

☐ Reciprocity (Fee $200)
☐ Exam (Fee $225 – Structural see Fee List)

The Appropriate Application Fee Must Accompany This Application
Applicant's name: ____________________________

Address: ___________________________________

is seeking licensure as a (discipline) ______________________ Engineer in Nevada and has sent you this request for a professional reference. We understand that you are a Licensed Professional Engineer (license may be in any state) and have personal knowledge of the applicant’s engineering work, character and ethics. Please complete, sign, then stamp or seal this form. Place it in an envelope; seal and sign the envelope according to the instructions, then return the envelope to the Board office. This Reference is confidential and will not be accepted by the Board if not properly completed as instructed. THE NEVADA BOARD HAS ON FILE A NOTARIZED AFFIDAVIT RELEASING ALL REFERENCES, EMPLOYERS AND FORMER EMPLOYERS, NAMED BY THE APPLICANT, FROM ALL LIABILITY FOR ANY DAMAGE WHATSOEVER FOR GIVING INFORMATION AS REQUIRED ON THIS FORM.

**Applicant:** Describe up to 3 projects you had full or partial responsibility for while working with this professional engineer. Include dates, locations, and descriptive statements defining design work performed.

(Attach an additional sheet if more space is needed)

(1) _____________________________________________________________________________
What is a ‘Professional Engineer (PE)?

Licensing

Obligations
What is a ‘Professional Engineer (PE)?

By acquiring a license from its State Board, a Professional Engineer meets a set of **minimal requirements** for practicing the engineering profession in his/her field.
What is a ‘Professional Engineer (PE)?

**Obligations:** As other licensed professionals, the PE must protect the ‘safety, health, and welfare of the public’

**Caution:** Your PE stamp of approval makes you legally responsible for the safety of the design bearing your signature. As you shall see, this is a significant responsibility.
CODE OF ETHICS OF ENGINEERS

THE FUNDAMENTAL PRINCIPLES

Engineers uphold and advance the integrity, honor and dignity of the engineering profession by:
I. using their knowledge and skill for the enhancement of human welfare;
II. being honest and impartial, and serving with fidelity the public, their employers and clients;
III. striving to increase the competence and prestige of the engineering profession; and
IV. supporting the professional and technical societies of their disciplines.

THE FUNDAMENTAL CANONS

1. Engineers shall hold paramount the safety, health and welfare of the public in the performance of their professional duties.

2. Engineers shall perform services only in the areas of their competence.

3. Engineers shall issue public statements only in an objective and truthful manner.

4. Engineers shall act in professional matters for each employer or client as faithful agents or trustees, and shall avoid conflicts of interest.

5. Engineers shall build their professional reputation on the merit of their services and shall not compete unfairly with others.

6. Engineers shall act in such a manner as to uphold and enhance the honor, integrity and dignity of the profession.

7. Engineers shall continue their professional development throughout their careers and shall provide opportunities for the professional development of those engineers under their supervision.

346 East 47th Street New York, NY 10017

*Formerly Engineers' Council for Professional Development. (Approved by the ECPD Board of Directors, October 3, 1977)

Code of Ethics for Engineers. (Accreditation Board for Engineering and Technology)
The End