Electromagnetics 1 (ICE2003)

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Contact Info.

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- **Tel:** 860-7432

References

- **Main text book**: Engineering Electromagnetics, Hayt & Buck, McGraw-Hill, 2012. (8^{th} Ed.)
- **You can also refer to:** Field and Wave Electromagnetics, David K. Cheng, Addison Wesley, 1989.

Grading

- **Mid-term exam:** 45%
- **Final exam:** 45%
- **Report:** 5%
- **Attendance:** 5%

총점(100) = 45*중간고사/100 + 45*기말고사/100 + 5*리포트/100 + 출석점수

*중간고사, 기말고사, 퀴즈, 리포트 각각의 만점은 100점.
*출석점수 = max[(5 – 결석횟수/2 – 지각횟수/4), 0]
*결석/지각 횟수는 수강신청변경 기간 이후부터 산정

Grading

- **A:** ? %
- **B:** ? %
- **C:** ? %
- **D/F:** ? %

*학교 지침 + 타 분반과의 조정 통해 결정 후 공지 예정
*앞 슬라이드의 총점 순위에 따라 기계적으로 학점 부여

Electromagnetics

- **전자기력을 다루는 학문**
  - 강력(Strong force)
  - 전자기력(Electromagnetic force)
  - 약력(Weak force)
  - 중력(Gravitational force)

- **전기 / 전자기파와 관련된 모든 현상의 가장 기본 이론**

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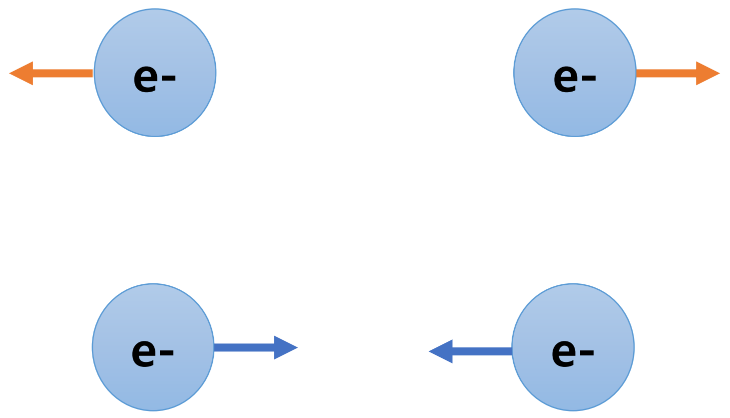

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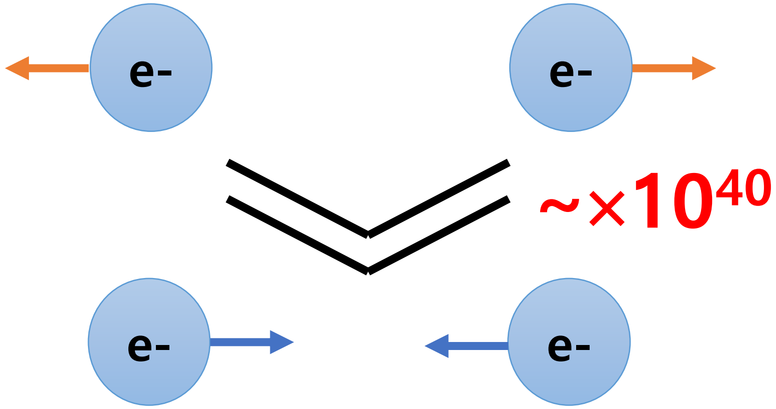
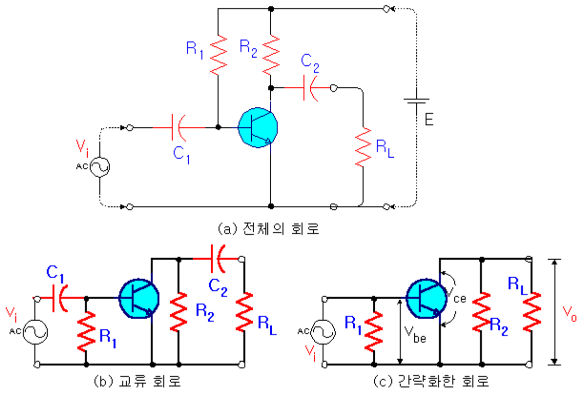
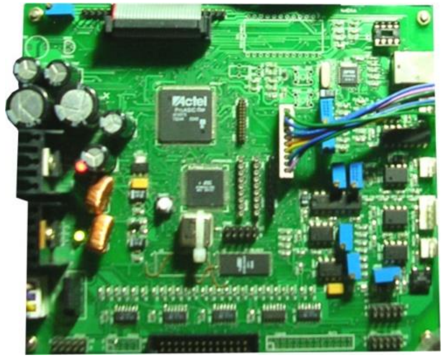


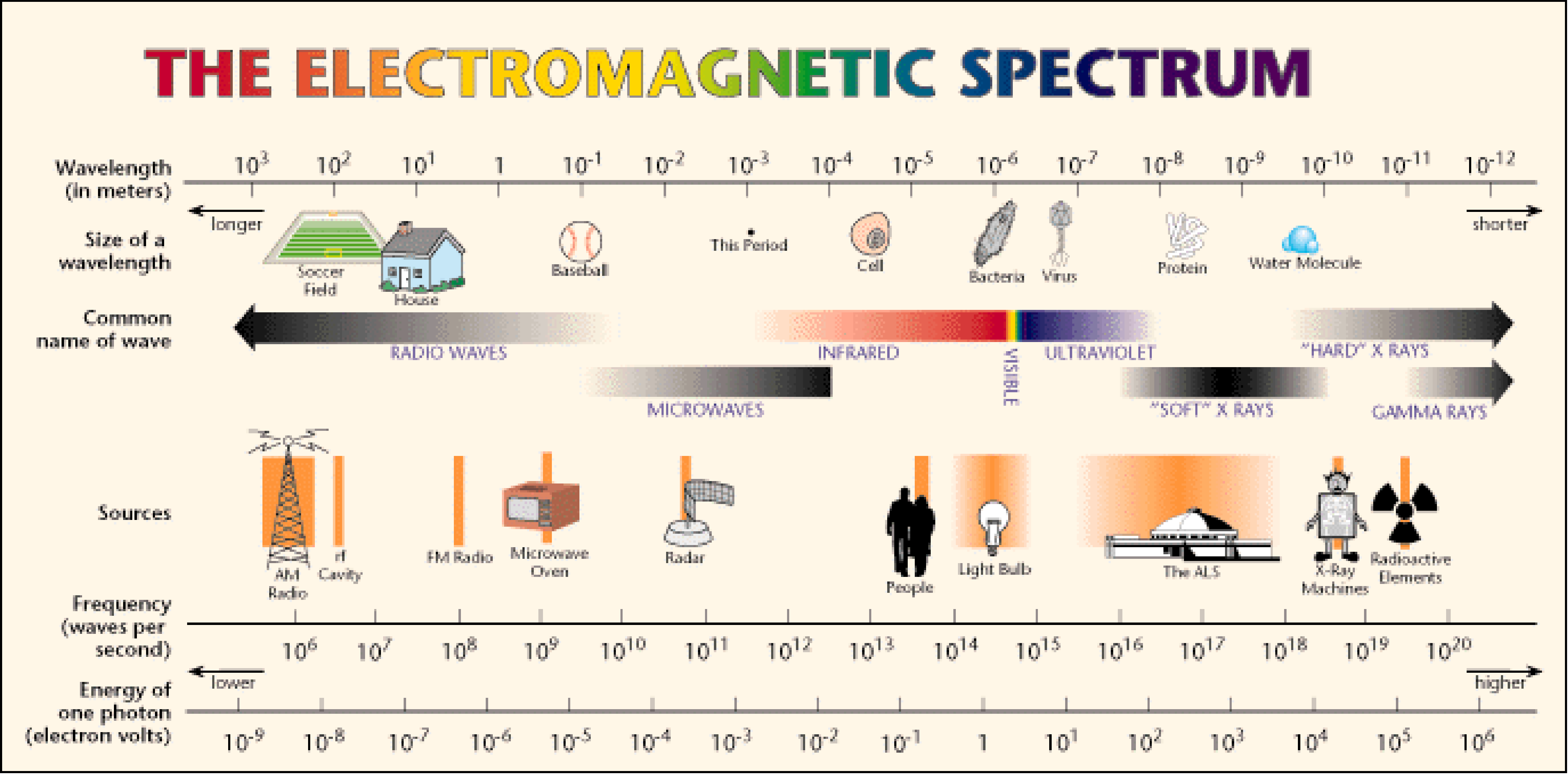
- **전기 / 전자기파와 관련된 모든 현상의 가장 기본 이론**

Electromagnetics



교류 회로





https://www2.lbl.gov/MicroWorlds/ALSTool/EMSpec/EMSpec2.html

Maxwell Equations

$$\nabla \times \mathbf{E} = -\frac{\partial \mathbf{B}}{\partial t}$$

$$\nabla \times \mathbf{H} = \mathbf{J} + \frac{\partial \mathbf{D}}{\partial t}$$

$$\nabla \cdot \mathbf{D} = \rho$$

$$\nabla \cdot \mathbf{B} = 0$$

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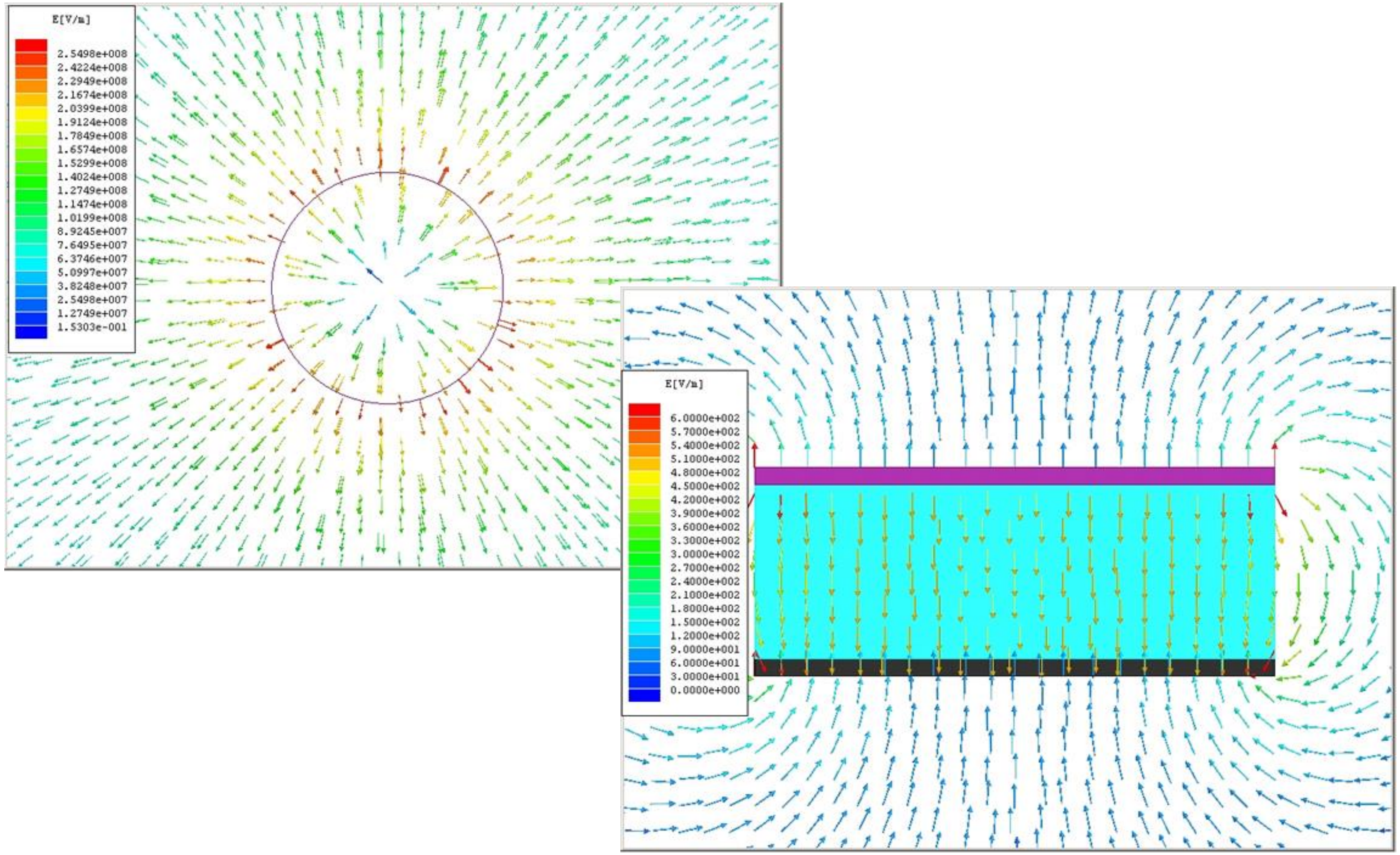

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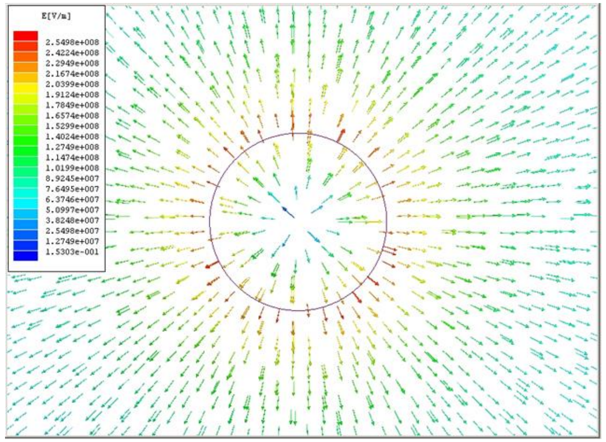

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$$\rho(x,y,z)$$

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$$\rho(x, y, z, t)$$

Maxwell Equations – 전자기학1 부분

$$\nabla \times \mathbf{E} = -\cancel{\frac{\partial \mathbf{B}}{\partial t}}^{\,0}$$

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Electric Field Intensity, 전기장 강도

$$\mathbf{D}(x, y, z) = D_x(x, y, z)\mathbf{a_x} + D_y(x, y, z)\mathbf{a_y} + D_z(x, y, z)\mathbf{a_z}$$

Electric Flux Density, 전속밀도

$$\mathbf{J}(x, y, z) = J_x(x, y, z)\mathbf{a_x} + J_y(x, y, z)\mathbf{a_y} + J_z(x, y, z)\mathbf{a_z}$$

Current Density, 전류밀도 (I, 전류)

$$\rho(x, y, z)$$

Charge Density, 전하밀도 (Q, 전하량)

Maxwell Equations – 전자기학1 부분

- Vector Analysis
- Coulomb's Law
- Electric Field Intensity
- Electric Flux Density, Gauss's Law
- Energy and Potential
- Current and Conductor
- Dielectrics and Capacitance
- Poisson's Equation, Laplace's Equation