

Physics 112 Syllabus

Mr. Joseph L. Powlette powlette@cs.moravian.edu, phone 1438, CHS 110

Text: Physics 2000 (Part 1 , Part 2), Calculus 2000 by E.R. Huggins

Nolan Physics CD (N)

| Date | Topic | Readings | Exercises | Lab |
|--------|----------------|------------------------|------------|-------------------------------|
| Jan 16 | Coulomb's law | 24.1-24.5, N 20.5-20.6 | 1,3,4, N17 | Electrostatics Demonstrations |
| 18 | Line of charge | 24.6-24.9, N20.6-20.7 | 5,6,N25 | |
| 20 | Electric Field | 24.10-24.19,N21.1-21.4 | 7,N4 | |

| | | | | |
|----|----------------|-----------------|-----------|---------------|
| 23 | Gauss' law | 24.20-24.25,N22 | 8,10,N 16 | Electrostatic |
| 25 | Gauss' law | 24.26-24.29,N22 | 9,11 | problems |
| 27 | Field plotting | 25.1-25.12,N23 | 2,4,N34 | |

| | | | | |
|-------|-------------------|------------------------|-------------------|----------------|
| 30 | Conductors | 26.1-26.10,N22.7-22.8 | 1,3,4, N20 (Ch22) | Field plotting |
| Feb 1 | Conductors | 26.11-26.17 | 6,7,10, | |
| 3 | Electric circuits | 27.1-27.10,N24.1-24.10 | 1, N27,N29 | |

| | | | | |
|----|------------------|------------------------------------|----------|------------------|
| 6 | Kirchhoff's laws | 27.10-27.13,N24.11 | 2,3, N44 | Charge/discharge |
| 8 | Capacitors | 27.14-27.32,N25.1-25.2,N25.5-25.10 | 5,6,N46 | of a capacitor |
| 10 | Magnetism | 28.1-28.17,N26.1-26.2 | 2,3, N6 | Read 27.22-27.28 |

| | | | | |
|----|-----------------------|-------------|--------|----------------|
| 13 | Exam 1 | Ch. 24-27 | | Magnetic field |
| 15 | Particles in B fields | 28.18-28.23 | 4,5 | of a coil |
| 17 | Relativistic E & P | 28.24-28.33 | 8,9,10 | |

| | | | | |
|----|---------------|------------------------|--------|-----|
| 20 | Ampere's law | 29.7-29.13,N26.8-26.11 | 4,5,6, | e/m |
| 22 | Ampere's law | 29.14-29.18 | 7,8 | |
| 24 | Faraday's law | 30.1-30.10,N27.2 | 1, N5 | |

| | | | | |
|-------|---------------|------------------------|-------------------|-------------------------|
| 27 | Faraday's law | 30.11-30.20,N27.3-27.4 | 2,3,4,N11 | Faraday's law |
| 29 | Faraday's law | 30.21-30.26 | 5,6,8,N16,N17,N18 | and magnetic force on a |
| Mar 2 | Light | 33.1-33.11,N32.1-32.2 | 1,2,3,4,N3 | conductor |

| | | | | |
|----|---------------------|-------------------|--------------|--------------|
| 12 | Diffraction grating | 33.12-33.19,N32.6 | 5,6,9,N44 | Spectrometer |
| 14 | Doppler & grating | 33.20-33.30,N32.5 | 10,13,14,N40 | |
| 16 | Photons | 34.1-34.9 | 1,2,3, | |

| | | | | |
|----|----------------------------|-------------|---------------|----------------|
| 19 | Exam 2 | Ch 28-33 | Omit Ch 31,32 | Diffraction of |
| 21 | Interference -- Thin Films | Norlan 32.4 | N23,N26,N35 | slits |
| 23 | Continue above | | N31 | |

| | | | | |
|----|-------------------|------------|----------|-------------|
| 26 | x-ray diffraction | 36.1-36.7 | 1,2,3 | x-ray |
| 28 | Photons | 34.1-34.16 | 4,6,7,10 | diffraction |
| 30 | No Class | | | |

| | | | | |
|-------|---------------------------|------------------------------------|------------|-------------|
| Apr 2 | Electron diffraction | 35.10-35.12, 36.8-36.14 | ch36.4,5&6 | Snell's law |
| 4 | Lasers | 37(all) | 1,2,4 | |
| 6 | Reflection and refraction | Optics 1-18, N30.1-30.2,N31.1-31.6 | 1a,1b,2,3 | |

| | | | | |
|----|-------------|--------------------------|------------|--------|
| 9 | Lenses | Optics 18-30,N31.8-31-13 | 6,7,8 | Lenses |
| 11 | Lenses | Cont. | 9,11,12,13 | |
| 13 | Bohr Theory | 35.1-35.12 | 1,2,5 | |

| | | | | |
|----|----------|--------------|----------|-------------|
| 16 | continue | | 7,8,9,10 | Radioactive |
| 18 | Exam 3 | Ch 34-Optics | | decay |
| 20 | | | | |

| | | | | |
|----|----------------|-------------------|---|--------|
| 23 | | | | No Lab |
| 25 | Nuclear matter | 20.1-20.8 | 1 | |
| 27 | Review | Course evaluation | | |

| | | | | |
|-------------|------------|--|-----------------------|--|
| May 4, 8:30 | Final Exam | | Formula sheet allowed | |
|-------------|------------|--|-----------------------|--|

Hour exams =25 %

Final exam=25%

Quizzes and problem solutions=25%

Laboratory average=25%

Problem solutions are to be your own work and but cooperation with other students is permitted. Help with problems is available from the instructor, problem sessions and the evening help sessions (run by the Society of Physics Students). Office hours are posted but I am available at any time that I am not in class or working in a laboratory.

Attendance of lectures is important since new material, problem solutions, different approaches from that of the text and computer instructions will be presented during this time.

Students who wish to request accommodations in this class for a disability should contact Mr. Joe Kempfer, Assistant Director of Learning Services for Disability Support, 1307 Main Street (extension 1510). Accommodations cannot be provided until authorization is received from the office of Learning Services.