THE LICENSING EXAMINATIONS FOR THE PROFESSIONAL ENGINEER

A professional engineer must take and pass two examinations in order to be eligible for licensure: the Fundamentals and the Principles and Practice of Engineering. These examinations are developed and graded by the National Council of Examiners in Engineering and Surveying (NCEES). NCEES is comprised of all the state boards who offer a licensing program. There are 55 jurisdictions considered members of the NCEES Council. Decisions regarding the examination development, administration, reciprocity, etc. are made by committees whose members are representatives of the boards of each state.

Committees of professional engineers from across the country and in all fields of engineering are also involved in the development, refinement and grading of both examinations. Periodically, NCEES conducts an analysis of what duties an engineer performs on the job. A survey is sent to engineers across the country in all arenas. This data is compiled and used to profile each of the major fields of engineering and to determine what information a new licensee needs to know. These surveys are conducted every 5-7 years.

Each state contracts with the NCEES for use of the exam in its jurisdiction. Basic guidelines of eligibility to sit for the tests are recommended by NCEES but the actual requirements are the responsibility of each state. In most states eligibility for the Fundamentals examination includes completion or near completion of a bachelors degree in engineering. For the Principles and Practice examination, candidates typically must possess a bachelors degree in engineering and have four years of experience in a field of engineering. Each state board reviews a candidate's credentials prior to granting permission to sit for one or bath of the tests.

In Michigan, candidates must apply for eligibility for the Principles and Practice examination but there are no requirements to sit for the Fundamentals examination. Michigan candidates apply to take either examination through a contractor we have hired to administer the tests for us: Local Government Research, LGR. LGR is responsible for administering the tests to candidates who have been approved by the Michigan Board staff within the guidelines set by the Department and NCEES. They notify the candidates of when and where the test is, send out the test results and offer the candidates the opportunity to review the test. The Testing Services Division serves as a liaison between the Board, staff, NCEES and LGR.

Fundamental of Engineering candidates are required to select a discipline in which to solve problems for the afternoon session. All candidates will take 120 one point items in the morning and in the afternoon, each candidate will select an engineering section in which 60 two point items are presented. The disciplines for selection are Chemical, Civil, Electrical, Mechanical, Industrial or General Engineering. All the engineering disciplines will be included in one test book but the candidates will be required to select only one discipline for the afternoon session. The discipline is selected at the time of the test and does not have to be the same area in which the candidate received his/her education.

Principles and Practice of Engineering candidates will be required to select a single discipline for testing. Candidates will be asked to indicate the one discipline for testing on the scheduling form. At the test site, each candidate will be given the one test booklet containing the subject matter problems. No additional books will be distributed.

FUNDAMENTALS OF ENGINEERING EXAMINATION (FE or EIT or Part I)

The FE examination is an eight-hour examination administered twice a year - April and October. It is given the same day in two separate four-hour sessions, the morning and the afternoon. The questions in the morning session are worth one point each; the questions in the afternoon session are worth two points each. No points are subtracted for incorrect responses. Therefore, it is to the candidate's advantage to answer every question.

The morning session contains 120 one point multiple choice items. The subject areas are:

Subject Matter Area	% of Problems
Chemistry	9
Computers	5
Dynamics	8
Electric Circuits	10
Engineering Economics	4
Ethics	4
Fluid Mechanics	7
Materials Science/Structure of Matter	7
Mathematics	20
Mechanics of Materials	7
Statics	10
Thermodynamics	9

The afternoon session contains 60 two point multiple choice items. Candidates must select one of the following subject areas in which to solve problems for the afternoon:

Chemical
Civil
Industrial
General
Electrical
Mechanical

The FE exam is a 'limited reference' test. The reference manual supplied at the test will contain all the tables and formulae that will be needed for the test. As of June 1998, preview copies of the reference manual will no longer be shipped to each candidate by the state board offices. A copy of the manual can be purchased through NCEES (800-250-3196) or it can be reviewed at the website http://www.ncees.org.

Applicants may use a slide rule or any silent, hand-held, non-printing, battery operated or self-powered calculator. (No computers are permitted.) No writing tablets, loose notes or tables are permitted. The 'limited reference' manual provided to the candidates prior to the test is not permitted in the test. Examinees are not permitted to exchange any reference materials or aids during the examination.

The items on the FE examination may be stated in both U.S customary and SI (metric) units with candidates given the option to select either system. The U.S. customary units problems are gradually being eliminated with the expectation that all problems will be in metric units only by 2000. During that transition, the percentage of metric units only problems will increase for each administration.

The FE examination is administered on Saturday .

PRINCIPLES AND PRACTICE OF ENGINEERING EXAMINATION (PE or Part II)

The PE examination is an eight-hour one day open book examination administered in two four-hour periods. The examination is offered on a specified Friday in April and in October. The examination is a series of problems presented in a single engineering discipline. The problems cover the types of knowledge in which a licensed engineer must be competent. Candidates must select four problems in the morning session and four problems in the afternoon session for submission for grading. A total of eight problems will be accepted.

ENGINEERING DISCIPLINES OFFERED IN APRIL AND OCTOBER

The engineering disciplines offered in April and October are civil, chemical, electrical, mechanical and environmental. The morning session of the chemical and mechanical disciplines contains 10 problems each. The morning session of civil and electrical contains 12 problems each. The morning session of environmental contains 4 problems. All problems in the morning session are essay type format. Candidates may submit only four problems for scoring in the morning.

The afternoon session contains 10 problems each for chemical and mechanical, 12 problems for civil and electrical and 4 problems for environmental. All problems in the afternoon session are multiple choice format. Candidates may submit only four problems for scoring in the afternoon.

SPECIAL ENGINEERING DISCIPLINES OFFERED IN OCTOBER ONLY

The special engineering examination disciplines of agricultural, control systems, fire protection, industrial, manufacturing, metallurgical, mining/mineral, nuclear and petroleum are offered once a year in October.

Additional information regarding the types of problems (essay or multiple choice), the number of questions and the topics included in each discipline can be found in the chart in this mailing or at http://www.ncees.org.

The PE examination is an open book examination. The applicant may use textbooks, handbooks, bound reference materials, slide rules and battery operated, silent calculators. No writing tablets, loose notes or tables are permitted. (Three ring binders can be used provided all papers are contained in the binder.) Examinees are not permitted to exchange any reference materials or aids during the examination. Computers are not permitted.

GRADING THE PRINCIPLES AND PRACTICE OF ENGINEERING

The PE examination is graded by engineers hired and trained by NCEES. Each problem has a carefully detailed answer developed before the test is administered. A scoring plan is included with the answer indicating how many points are awarded for completion of each step. Only scores of 0, 2, 4, 6, 8 or 10 are awarded. Each problem is worth a maximum of 10 points. A perfect score would be 80 points since each candidate must complete a total of eight problems. The national passing score for each discipline will be published with your test results. The raw score (the number of points you achieve on the test) on the eighty point scale will be converted to a scaled score on the one hundred point scale.