

10/24/89

[REVISOR] RJS/JC AR1514

1 State Board of Vocational Technical Education

2

3 Adopted Permanent Rules Relating to Vocational Postsecondary
4 Teacher Licenses; Technical Occupations

5

6 Rules as Adopted

7 3700.0700 LICENSES IN THE TECHNICAL OCCUPATIONAL AREA.

8 Subpart 1. Listed here. An applicant for a license to
9 teach postsecondary vocational programs and courses in the
10 technical occupational area must meet the requirements in this
11 part. These requirements are in addition to the requirements
12 listed in part 3700.0100 and for a particular license (listed in
13 the part that covers that particular license).

14 Subp. 2. Recent occupational experience. An applicant for
15 a license to teach in the technical occupational area must have
16 2,000 hours of occupational experience within the five years
17 just before applying for that license.

18 Subp. 3. Does not apply. Part 3515.9921 does not apply to
19 parts 3700.0705 to 3700.0770.

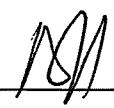
20 3700.0710 AUDIO RECORDING SPECIALIST.

21 Subpart 1. May teach. A teacher who has an audio
22 recording specialist license may teach in the audio recording
23 specialist program and may also teach courses in:

- 24 A. basic audio recording and reinforcement;
- 25 B. audio for nonmedia professionals;
- 26 C. mixing I and II; and
- 27 D. sound tracks for slide productions.

28 Subp. 2. Other requirements. The applicants must meet the
29 requirements listed in part 3700.0100 and the requirement for a
30 teacher in the technical area under part 3700.0700.

31 Subp. 3. Occupational experience requirement. The
32 applicant must have 8,000 hours of occupational experience as a
33 primary audio engineer in multi-track recording of music and
34 audio for television film and audio-visual and must have
35 experience in three of the areas listed in this subpart:

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by Revisor 

- 1 A. audio time code lock;
- 2 B. musical instrument digital interface (MIDI);
- 3 C. audio location recording;
- 4 D. troubleshooting audio equipment; and
- 5 E. audio recording project planning and management.

6 Subp. 4. **Substitution for occupational experience.** The
7 applicant may substitute the education described under item A,
8 B, C, or D for up to 4,000 hours of occupational experience
9 required under subpart 3. The education must be from an
10 accredited postsecondary institution. If the substitution is
11 made, the applicant must still comply with the recency
12 requirements in part 3700.0700, subpart 2.

13 A. A bachelor's or higher degree with a major in
14 audio recording, television production, or speech and
15 broadcasting may be substituted for 4,000 hours.

16 B. An associate degree in audio recording specialist,
17 television, or radio production may be substituted for 2,000
18 hours.

19 C. A diploma in audio recording specialist,
20 television, or radio production may be substituted. A one-year
21 program or a program of 45 or more quarter credits equal 1,050
22 hours. A two-year program or a program of 90 or more quarter
23 credits equal 2,000 hours.

24 D. The completion of courses for credit or clock
25 hours for audio recording specialist, television, and radio
26 production. One hour of instruction equals one hour of
27 occupational experience. One quarter credit equals 20 hours of
28 occupational experience. One semester credit equals 30 hours of
29 occupational experience.

30 Subp. 5. **Substitution for recent occupational experience.**
31 Teaching experience in primary program content at an accredited
32 postsecondary institution or industrial setting may be
33 substituted for 1,500 of the 2,000 hours required in part
34 3700.0700, subpart 2, if the teaching is done during the
35 five-year period. The teaching must be in audio recording. Two
36 hours of teaching equal one hour of occupational experience.

1 3700.0715 AUTOMATED SYSTEMS TECHNOLOGY.

2 Subpart 1. **May teach.** A teacher who has an automated
3 systems technology license may teach in the automated systems
4 technology, automated packaging equipment maintenance, automated
5 manufacturing, automated equipment maintenance, flexible
6 automation, and robotics programs and may also teach courses in:

- 7 A. schematic reading;
8 B. programmable logical controller (PLC);
9 C. industrial electronics (nonconsumer);
10 D. AC/DC motor controls;
11 E. introduction to robotics;
12 F. nonservo robots;
13 G. servo robots;
14 H. manufacturing cells;
15 I. computerized integrated manufacturing (CIM); and
16 J. automated packaging technology.

17 Subp. 2. **Other requirements.** The applicant must meet the
18 requirements listed in part 3700.0100 and the requirements for a
19 teacher in the technical occupational area under part 3700.0700.

20 Subp. 3. **Educational and occupational experience**
21 **requirement.** The applicant must have the educational and
22 occupational experience as described in item A, B, or C. The
23 education must be from an accredited postsecondary institution.

24 A. A bachelor's or higher degree with a major in
25 computer science, industrial technology, or the following fields
26 of engineering: robotics, industrial process control,
27 mechanical, electrical, computer, packaging, or motion control
28 and 4,000 hours of occupational experience in automated
29 manufacturing process application and industrial controls. This
30 experience must be in at least two of the following areas:
31 production planning, systems interfacing, manufacturing methods,
32 programming systems, or system troubleshooting and repair of
33 system, and system configuration and product process.

34 B. An associate degree in robotics, manufacturing
35 technology, electronics, automated systems, automated

1 manufacturing, automated machinery, automated packaging,
2 instrumentation technology, or computer technology and 6,000
3 hours of occupational experience in automated manufacturing
4 process application and industrial controls. A minimum of 4,000
5 hours in this area must be in at least two of the following:
6 planning, systems interfacing, manufacturing methods,
7 programming systems, or troubleshooting and repair of system and
8 system configuration and product process. The 4,000 hours must
9 include the 2,000 hours required in part 3700.0700, subpart 2.
10 The remaining experience may be in any of the following:
11 robotics/flexible automation application, flexible automation
12 programming, quality control in a production environment,
13 computer aided drafting (CAD), packaging technology, vision
14 systems, mechanical power transmission, fluid power mechanics,
15 computerized numerical controls (CNC), electronics technician,
16 and electrician with voltage application in excess of 220 watts
17 volts.

18 C. A two-year diploma program or a program of 90 or
19 more quarter credits in artificial intelligence, automated
20 equipment, automated packaging, automated systems, electronics,
21 fluid power, instrumentation technology, or computer technology
22 and 6,000 hours of occupational experience in automated
23 manufacturing process application and industrial controls. A
24 minimum of 4,000 of the hours in this area must be in at least
25 two of the following: planning, systems interfacing,
26 manufacturing methods, programming systems, or troubleshooting
27 and repair of system and system configuration and product
28 process. The 4,000 hours must include the 2,000 hours required
29 in part 3700.0700, subpart 2. The remaining experience may be
30 in any of the following areas: robotics/flexible automation
31 application, flexible automation programming, quality control in
32 a production environment, computer aided drafting (CAD),
33 packaging technology, vision systems, mechanical power
34 transmission, fluid power mechanics, computerized numerical
35 controls (CNC), electronics technician, and electrician with
36 voltage application in excess of 220 watts.

1 Subp. 4. **Substitution for recent occupational experience.**
2 Teaching experience at an accredited postsecondary institution,
3 industrial, or business setting in primary program content in
4 automated systems technology may be substituted for 1,500 of the
5 2,000 hours required in part 3709.0700, subpart 2. Two hours of
6 teaching equal one hour of occupational experience.

7 3700.0720 PRINTED CIRCUIT BOARD TECHNOLOGY.

8 Subpart 1. **May teach.** A teacher who has a printed circuit
9 board technology license may teach in the printed circuit board
10 program and may also teach courses in:

- 11 A. introduction to computer aided drafting (CAD);
- 12 B. basic electricity;
- 13 C. introduction to DOS;
- 14 D. fundamentals of electronic drafting; and
- 15 E. introduction to UNIX.

16 Subp. 2. **Other requirements.** The applicant must meet the
17 requirements listed in part 3700.0100 and the requirements for a
18 teacher in the technical area under part 3700.0700.

19 Subp. 3. **Educational and occupational experience**
20 **requirement.** The applicant must have the educational and
21 occupational experience described in item A, B, or C. The
22 education must be from an accredited postsecondary institution.

23 A. A bachelor's or higher degree with a major in
24 electrical engineering or industrial technology and 4,000 hours
25 of occupational experience designing printed circuit boards,
26 which must include computer aided drafting (CAD).

27 B. An associate degree in industrial technology,
28 electrical or electronic drafting, mechanical drafting,
29 electro-mechanical technology, computer aided design, or
30 electronics technology and 6,000 hours of occupational
31 experience designing printed circuit boards, which must include
32 computer aided drafting (CAD).

33 C. A diploma or certificate in a two-year program or
34 a program of 90 or more quarter credits in electrical or
35 electronic drafting, mechanical drafting, electro-mechanical

1 technology, industrial engineering technology, printed circuit
2 design technology, or electronics technology and 6,000 hours of
3 occupational experience designing printed circuit boards, which
4 must include computer aided drafting (CAD).

5 **Subp. 4. Substitution for recent occupational experience.**

6 The applicant may substitute teaching experience in primary
7 program content, at an accredited postsecondary institution,
8 industrial, or military setting in computer aided printed
9 circuit board design for 1,500 of the 2,000 hours required under
10 part 3700.0700, subpart 2. Two hours of teaching equal one hour
11 of the occupational experience required.

12 3700.0725 ENVIRONMENTAL TECHNOLOGY.

13 **Subpart 1. May teach.** A teacher who has an environmental
14 technology license may teach in the environmental technology,
15 air and water analysis technology, water/waste treatment
16 technician, food laboratory testing and management, and
17 environmental chemical technology programs and also teach
18 courses in:

- 19 A. chemistry;
- 20 B. microbiology;
- 21 C. instrument analysis;
- 22 D. air analysis; and
- 23 E. wastewater analysis.

24 **Subp. 2. Other requirements.** The applicant must meet the
25 requirements listed in part 3700.0100 and the requirements for a
26 teacher in the technical area under part 3700.0700.

27 **Subp. 3. Educational and occupational experience**
28 **requirement.** The applicant must meet the educational and
29 occupational experience described in item A, B, or C. The
30 education must be from an accredited postsecondary institution.

31 A. A bachelor's or above degree with a major in
32 chemistry, environmental science, or chemical engineering and
33 4,000 hours of occupational experience with a minimum of 2,000
34 hours in laboratory analysis in an energy research center,
35 industrial environmental laboratory, chemical quality control

1 laboratory, or in operational testing, sampling, and monitoring
2 in effluent discharge and must include the 2,000 hours required
3 in part 3700.0700, subpart 2. These experiences must be in a
4 laboratory using Environmental Protection Agency standards. The
5 remaining 2,000 hours may be in evaluation and required process
6 control outcome in a treatment center plant or on site sampling
7 and analysis of stack emissions, ambient air, and noise
8 pollution.

9 B. An associate degree in environmental technology,
10 food science laboratory testing and management, chemical
11 laboratory testing and management, water/waste treatment, or
12 water and air analysis and 6,000 hours of occupational
13 experience with a minimum of 2,000 hours in laboratory analysis
14 in an energy research center, industrial environmental
15 laboratory, chemical quality control laboratory, or in
16 operational testing, sampling, and monitoring in effluent
17 discharge and must include the 2,000 hours required in part
18 3700.0700, subpart 2. These experiences must be in a laboratory
19 using Environmental Protection Agency standards. The remaining
20 hours may be in evaluation and required process control outcome
21 in a treatment center plant or on site sampling and analysis of
22 stack emissions, ambient air, and noise pollution.

23 C. A two-year diploma or a program of 90 or more
24 quarter credits in environmental technology, food science
25 laboratory testing and management, chemical laboratory testing
26 and management, water/waste treatment or water and air analysis
27 and 6,000 hours of occupational experience with a minimum of
28 2,000 hours in laboratory analysis in an energy research center,
29 industrial environmental laboratory, chemical quality control
30 laboratory, or operational testing, sampling, and monitoring in
31 effluent discharge and must include the 2,000 hours required in
32 part 3700.0700, subpart 2. These experiences must be in a
33 laboratory using Environmental Protection Agency standards. The
34 remaining hours may be in evaluation and required process
35 control outcome in a treatment center plant or on site sampling
36 and analysis of stack emissions, ambient air, and noise

1 pollution.

2 Subp. 4. Substitution for recent occupational experience.

3 The applicant may substitute teaching experience in primary
4 program content, at an accredited postsecondary institution,
5 industrial, or military setting in environmental laboratory
6 analysis according to Environmental Protection Agency standards
7 for 1,500 of the 2,000 hours required under part 3700.0700,
8 subpart 2. Two hours of teaching equal one hour of the
9 occupational experience.

10 3700.0730 LASER ELECTRO OPTICS TECHNOLOGY.

11 Subpart 1. May teach. A teacher who has a laser electro
12 optics technology license may teach in the laser electro optics
13 technology program and may teach courses in:

14 A. laser materials processing techniques;

15 B. medical laboratory lasers; and

16 C. vacuum systems for laser technology.

17 Subp. 2. Other requirements. The applicant must meet the
18 requirements listed in part 3700.0100 and the requirements for a
19 teacher in the technical area under part 3700.0700.

20 Subp. 3. Educational and occupational experience
21 requirement. The applicant must have the educational and
22 occupational experience described in item A, B, or C. The
23 education must be from an accredited postsecondary institution.

24 A. A bachelor's or higher degree with a major in
25 mechanical or electrical engineering or laser technology and
26 4,000 hours of occupational experience in maintenance, testing,
27 and operation of industrial laser systems, laboratory laser
28 systems, or medical laser systems. The 4,000 hours must include
29 the 2,000 hours required in part 3700.0700, subpart 2.

30 B. An associate degree in laser technology or
31 electronics technology and 6,000 hours of occupational
32 experience with a minimum of 4,000 hours in maintenance,
33 testing, and operation of industrial laser systems, laboratory
34 laser systems, or medical laser systems. The 4,000 hours must
35 include the 2,000 hours required in part 3700.0700, subpart 2.

1 The remaining hours may be in installation maintenance or
2 testing of electronic equipment.

3 C. A diploma in laser electro optics technology or
4 electronics technology. A two-year program or a program of 90
5 or more quarter credits and 6,000 hours of occupational
6 experience with a minimum of 4,000 hours in maintenance,
7 testing, and operation of industrial laser systems, laboratory
8 laser systems, or medical laser systems. The 4,000 hours must
9 include the 2,000 hours required in part 3700.0700, subpart 2.
10 The remaining hours may be in installation, testing, or
11 maintenance of electronic equipment.

12 Subp. 4. **Substitution for recent occupational experience.**
13 The applicant may substitute teaching experience in primary
14 program content, at an accredited postsecondary institution,
15 industrial, or military setting in laser electro optics
16 technology for 1,500 of the 2,000 hours required under part
17 3700.0700, subpart 2. Two hours of teaching equal one hour of
18 the occupational experience required.

19 3700.0735 METALLURGICAL TECHNOLOGY.

20 Subpart 1. **May teach.** A teacher who has a metallurgical
21 technology license may teach in the metallurgical technology
22 program and may teach metallurgical specific courses.

23 Subp. 2. **Other requirements.** The applicant must meet the
24 requirements listed in part 3700.0100 and the requirements for a
25 teacher in the technical area under part 3700.0700.

26 Subp. 3. **Educational and occupational experience**
27 **requirement.** The applicant must meet the educational and
28 occupational experience described in item A, B, or C. The
29 education must be from an accredited postsecondary institution.

30 A. A bachelor's or higher degree with a major in
31 engineering, metallurgy, industrial technology, chemistry, or
32 physics and 4,000 hours of occupational experience with a
33 minimum of 2,000 hours in metallography, failure analysis of
34 materials, and physical or mechanical testing of materials. The
35 remaining hours may be in chemical analysis of metals,

1 nondestructive testing, or quality control of metal
2 manufacturing.

3 B. An associate degree in engineering, metallurgical
4 technology, nondestructive testing, powder metal technology, or
5 industrial laboratory technology and 6,000 hours of occupational
6 experience with a minimum of 2,000 in metallography, failure
7 analysis of material, and physical or mechanical testing of
8 materials. The remaining hours may be in chemical analysis of
9 metals, nondestructive testing, or quality control of metal
10 manufacturing.

11 C. A two-year program or a program of 90 or more
12 quarter credits in metallurgical technology, nondestructive
13 testing, powder metal technology, or industrial laboratory
14 technology and 6,000 hours of occupational experience with a
15 minimum of 2,000 hours in metallography, failure analysis of
16 materials, and physical or mechanical testing of materials. The
17 remaining hours may be in chemical analysis of metals,
18 nondestructive testing, or quality control of metal
19 manufacturing.

20 Subp. 4. **Substitution for recent occupational experience.**
21 The applicant may substitute teaching experience in primary
22 program content, at an accredited postsecondary institution,
23 industrial, or military setting in metallurgical technology or
24 nondestructive testing for 1,500 of the 2,000 hours required
25 under part 3700.0700, subpart 2. Two hours of teaching equal
26 one hour of the occupational experience.

27 3700.0740 METROLOGY TECHNOLOGY.

28 Subpart 1. **May teach.** A teacher who has a metrology
29 technology license may teach in the metrology technology program
30 and may teach metrology specific courses.

31 Subp. 2. **Other requirements.** The applicant must meet the
32 requirements listed in part 3700.0100 and the requirements for a
33 teacher in the technical area under part 3700.0700.

34 Subp. 3. **Educational and occupational experience**
35 **requirement.** The applicant must meet the educational and

1 occupational experience described in item A, B, or C. The
2 education must be from an accredited postsecondary institution.

3 A. A bachelor's or higher degree with a major in
4 mathematics, industrial technology, physics, or engineering and
5 4,000 hours of occupational experience testing, calibrating,
6 troubleshooting, and repairing precision measurement equipment.

7 B. An associate degree in engineering,
8 instrumentation technology, metrology, electronics technician,
9 or applied physics and 6,000 hours of occupational experience
10 testing, calibrating, troubleshooting, and repairing precision
11 measurement equipment.

12 C. A two-year program or a program of 90 or more
13 quarter credits in metrology, instrumentation technology, or
14 electronic technology and 6,000 hours of occupational experience
15 testing, calibrating, troubleshooting, and repairing precision
16 measurement equipment.

17 **Subp. 4. Substitution for recent occupational experience.**

18 The applicant may substitute teaching experience in primary
19 program content, at an accredited postsecondary institution,
20 industrial, or military setting in metrology technology for
21 1,500 of the 2,000 hours required under part 3700.0700, subpart
22 2. Two hours of teaching equal one hour of the occupational
23 experience.

24 3709.0200 ARTIFICIAL INTELLIGENCE TECHNICIAN.

25 [For text of subpart 1, see M.R. 1989]

26 **Subp. 2. Other requirements.** The applicant must meet the
27 requirements in part 3700.0100 and the requirements for a
28 teacher in the technical area under part 3700.0700.

29 [For text of subp 3, see M.R. 1989]

30 **Subp. 4. Occupational recency substitution.** Teaching
31 experience at an accredited postsecondary institution or at an
32 industrial setting may be substituted for 1,500 of the 2,000
33 hours required in part 3700.0700, subpart 2, if the teaching is
34 done during the five-year period. The only substitution allowed
35 for the 500 hours of programming artificial intelligence

1 required under subpart 3, item B, is teaching programming
2 artificial intelligence. Otherwise, the teaching of any
3 programming may be substituted. Two hours of teaching equal one
4 hour of occupational experience.

5 3709.0210 VIBROACOUSTICS TECHNOLOGY.

6 [For text of subpart 1, see M.R. 1989]

7 Subp. 2. **Other requirements.** The applicant must meet the
8 requirements in part 3700.0100 and the requirements for a
9 teacher in the technical area under part 3700.0700.

10 Subp. 3. **Occupational experience requirement.** An
11 applicant must have 8,000 hours of verified occupational
12 experience in testing and measuring of both acoustics and
13 mechanical vibrations and must include the 2,000 hours of
14 occupational experience within the five years just before
15 applying for licensure.

16 [For text of subp 4, see M.R. 1989]

17 Subp. 5. **Occupational recency substitution.** Teaching
18 experience at an accredited postsecondary institution or at an
19 industrial or military setting may be substituted for 1,500 of
20 the 2,000 hours required in part 3700.0700, subpart 2, if the
21 teaching is done during the five-year period. The teaching must
22 be in vibroacoustics specific technology. Two hours of teaching
23 equal one hour of occupational experience.

24 3709.0220 PLASTIC COMPOSITES TECHNOLOGY.

25 [For text of subpart 1, see M.R. 1989]

26 Subp. 2. **Other requirements.** The applicant must meet the
27 requirements in part 3700.0100 and the requirements for a
28 teacher in the technical area under part 3700.0700.

29 Subp. 3. **Occupational experience requirement.** An
30 applicant must have 8,000 hours of verified occupational
31 experience in polymer composites. This experience must be in at
32 least two of the following: research and development, design,
33 formulations, and manufacturing and must include the 2,000 hours
34 of occupational experience within the five years just before
35 applying for licensure.

1 [For text of subp 4, see M.R. 1989]

2 Subp. 5. Occupational recency substitution. Teaching
3 experience at an accredited postsecondary institution or at an
4 industrial or military setting in plastic composites technology
5 may be substituted for 1,500 of the 2,000 hours required in part
6 3700.0700, subpart 2, if the teaching is done during the
7 five-year period. The teaching must be in plastic composites
8 technology. Two hours of teaching equal one hour of
9 occupational experience.

10 3709.0280 TELECOMMUNICATIONS SYSTEMS TECHNICIAN.

11 [For text of subpart 1, see M.R. 1989]

12 Subp. 2. Other requirements. The applicant must meet the
13 requirements in part 3700.0100 and the requirements for a
14 teacher in the technical area under part 3700.0700.

15 [For text of subps 3 and 4, see M.R. 1989]

16 Subp. 5. Occupational recency substitution. Teaching
17 experience at an accredited postsecondary institution, or at an
18 industrial or military setting may be substituted for 1,500 of
19 the 2,000 hours required in part 3700.0700, subpart 2, if the
20 teaching is done during the five-year period. The teaching must
21 be in telecommunications. Two hours of teaching equal one hour
22 of occupational experience.

23

24 RENUMBER. The Revisor of Statutes shall renumber Minnesota
25 Rules, parts 3709.0200 as 3700.0705; 3709.0220 as 3700.0750;
26 3709.0280 as 3700.0755; and 3709.0210 as 3700.0760.

27

28 LICENSE CONVERSION. EXISTING LICENSES, CONVERSION TO NEW
29 LICENSES. On the date this rule becomes effective, the board
30 shall convert a license listed in column A and issued under part
31 3515.9921 to the license listed in column B. At the next
32 renewal date for the license, the renewal license must show the
33 new license category.

34

35

A.

B.

10/24/89

[REVISOR] RJS/JC AR1514

- | | | |
|----|---|----------------------|
| 1 | 1. automated manufacturing technology | 1. automated systems |
| 2 | robotics | technology |
| 3 | automated packaging equipment | |
| 4 | maintenance | |
| 5 | automated systems technology | |
| 6 | 2. water and waste treatment technician | 2. environmental |
| 7 | occupations | technology |
| 8 | food laboratory testing and | |
| 9 | management | |
| 10 | environmental technician occupations | |