

INDUSTRIAL ARTS TEACHER-EDUCATION IN CALIFORNIA;
ITS DEVELOPMENT AND PRESENT REQUIREMENTS

by

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INDUSTRIAL ARTS TEACHER-EDUCATION IN CALIFORNIA; ITS DEVELOPMENT AND PRESENT REQUIREMENTS

CHAPTER I

INTRODUCTION

Industrial arts teacher-education in the State of California has been in existence approximately forty years. During this period of time many changes have been made in the program, resulting in the excellent teacher-education program of the present time.

This study is an attempt on the part of the author to collect and record authentic information concerning the development of Industrial Arts Teacher-Education in the State of California; to present in an orderly manner the changes from the first "manual training" courses to the present time.

Background of the Problem

The first evidence of a manual training program in an institution of higher learning in California was in the San Jose State College program of 1890, but it was not for the purpose of teacher-education. Probably the first California school to attempt the training of teachers for the manual arts subjects was Throop University (predecessor of California Institute of

Technology, established in 1920), founded at Pasadena in 1891. Throop Polytechnic Institute (name changed in 1892):

offered work of a college grade, but concentrated most of its instruction in manual training, domestic science, and kindred subjects; preparing its graduates mainly for teaching positions which were opened by the addition of manual arts to the curricula of the public schools.¹

The Throop Polytechnic Institute continued for nearly two decades with no change in its principal aims. In 1911 the Throop Polytechnic Institute was discontinued in favor of the Throop College of Technology.

Coincident with the establishment of Throop University in 1891, the Anna S.C. Blake Training School was established at Santa Barbara for the purpose of training public school children. In 1892 the instructor, Miss Rich, started classes in elementary "sloyd" work. In 1897 Miss Blake donated the school and property to the Santa Barbara Public School System.

Manual-training instruction for high school students was begun as follows; Joinery in 1899, wood carving in 1903, metal work, tooled leather, and jewelry making in 1906, bookbinding in 1908, pottery in 1909, printing in 1911, wood

¹ Bulletin of the California Institute of Technology. Catalogue Number for 1940, Vol. 49, No. 1, p. 64.

turning, patternmaking, forging and sheet-metal in 1911.¹

From the start offered by the Throop Polytechnic Institute and the Anna S.C. Blake Manual Training School the state-wide program of Industrial Arts Education has been developed. At the present time there are four institutions of higher education in California which prepare for teaching certificates in the field of Industrial Arts Education. Three of them are State Colleges: Chico State College, Santa Barbara State College, and San Jose State College. The fourth one is the University of California at Los Angeles.

Statement of the Problem

The problem of this study is to record the changes made in the curriculum of the industrial arts, showing how the curriculum has changed from the more specialized forms of work to the broader and more diversified program of the present time, leading to the present requirements for the California Special Secondary Credential for Industrial Arts Teachers.

¹ Bennett, Charles Alpheus, History of Manual and Industrial Education 1870 to 1917, p. 480-481.

Treatment of Data

After an analysis of the problem it was apparent that the study would develop under five classifications. Further study has shown that these classifications did not always fall in chronological order.

The study will be developed under the following headings:

I. Introduction.

The background of the manual arts program in California; states the problems, objectives, and limitations of the study.

II. The Foundation of the Manual Arts Teacher-Education Program in California; traces the changes in the program up to the founding of the State Teachers Colleges.

III. The Expansion of the Industrial Arts Teacher-Education Program in California; establishment of the Bachelor of Arts degree, and the unification of the program.

IV. The Professionalization of Industrial Arts Teacher-Education; academic requirements, and the present certification requirements.

V. Summary.

Limitations of the Study

By the very nature of the problem the study is necessarily limited to teacher-training institutions in California. The study is not intended to furnish a list of the changes year by year; rather it covers the development of a state-wide program with no intention of listing the individual institutional requirements except in cases where such listings might illustrate a point.

CHAPTER II

THE FOUNDATION OF THE MANUAL ARTS TEACHER-EDUCATION
PROGRAM IN CALIFORNIA

Manual arts was brought into the normal schools primarily as an activity subject of the training school program. It was not until after the turn of the century that normal schools offered manual arts as a part of the teacher-education program. At that time no mention was made of a teaching certificate in the subject.

The Beginning of Teacher-Education

The first evidence of teacher-education in the manual arts subjects (of the normal schools) comes from the "City Anna S.C. Blake Manual Training Normal School", Santa Barbara. In the summer of 1906 the Board inaugurated Normal work in that school.

In the 1908-09 Announcement of Normal Courses for the Anna S.C. Blake Manual Training School, Miss Rich, the principal, says:

The recognized trend of education is toward the introduction of manual training in the public schools to meet the requirements of rational preparation for life, in the child's early training.

Technical schools are sending out people fitted to teach high school pupils, but the normal schools which give an

adequate training for the special work in the primary and grammar grades are few in number and often inaccessible, on account of distance or expense, to the graduate, or teacher, gifted with love for the work and the necessary adaptability.

The demand for well trained teachers exceeds the supply, and yearly a large number of manual training teachers come from eastern schools. It was to bring the training within reach of the interested workers on the Pacific Coast that the Anna S.C. Blake Manual Training School, known throughout the United States for its high standards and good work, based on practical lines in the best educational sense, was opened three years ago to summer school students and last year to regular classes in sloyd.

The success of the normal work has enabled the Board of Education to arrange to continue the sloyd training and to establish a department of home economics on the same plan.

The aim of the normal department is primarily to give a broad and thorough training in these subjects to those who wish to prepare themselves to present the work to children's classes with full understanding of the value of the training in character building, and its relative place in the school curriculum.¹

During this same period the normal schools at San Jose, Los Angeles, and Chico were beginning to offer courses in manual arts in connection with their training programs for elementary teachers.

Teacher-education in the manual arts was well

¹ O'Reilly, Edmund. A History of Santa Barbara State Teachers College, p. 6-7.

started by 1909 with the establishment of the Santa Barbara State Normal School of Manual Arts and Home Economics.

The purpose of this school is to furnish the people of both sexes such professional training in manual arts and home economics as shall fit them to teach in the public schools of this state in the departments of manual arts and home economics.¹

Santa Barbara State Normal School being a special school was allowed to make its own special requirements for entrance, and, before the opening of the school in 1909, the following statement was issued in regard to the requirements for entrance and the courses that would be offered:

The entrance requirements are as follows: Graduation from a college, university, normal or special school; or certificate of attendance for two or more years in such schools, with recommendations from the same, or successful teaching experience.

.
Manual arts includes construction work for primary, elementary, grammar and high school.

Courses for women students: Bench work in wood, with correlated design and metal work, paper sloyd and elementary bookmaking. Pre-requisites: Training in design, and ability to model and to use the craft worker's tools.

There are at present no courses for less than a school year (ten months).

¹ School Law of California, 1921, p. 380-381.

The length of time required for graduation depends on the preparation and on the previous training, credits and credentials, combined with the special training received in the Santa Barbara Normal.¹

In the first year no men students enrolled in the school, although provision has been made to include courses for men. By 1912 a full program had been planned to care for men students. The courses offered were:

A course in industrial and manual arts which qualified them (meaning men students) to meet the various positions offered in technical schools, in high school, city and rural, intermediate, prevocational, upper grammar grade schools, and the special departments of the government schools and institutions.²

The entrance requirements for the authorized state normal schools were regulated by the State Board of Education. Persons entering were to be:

1. Of good moral character.
2. Sixteen years of age (or over).
3. That type of person who, if of a proper age would be admitted in the public schools of this state without restriction.
4. Teachers holding valid certificates to teach in any county in this state.³

¹ O'Reilly, Edmund. A History of Santa Barbara State Teachers College, p. 24.

² O'Reilly, Edmund. A History of Santa Barbara State Teachers College, p. 25.

³ State of California. School Law, 1909, p. 159ff.

The Broadening of the Program

In 1911 the State Legislature passed an act establishing

in the county of Fresno, State of California, a school to be called the "Fresno State Normal School," for training and educating teachers in the art of instructing and governing in the public schools of the state; the course of study prescribed for use in said school to include agriculture and manual training.¹

Two years later, in 1913, the State Legislature passed an act establishing

in Humboldt county, State of California, a state normal school to be called the "Humboldt State Normal School," for the training and education of teachers and others in the art of instructing and governing the public schools of this state; the course of study prescribed for use in said school to include agriculture and manual training.²

In 1915 in order to provide for a more unified program of teacher-education throughout the state, the legislature passed the Chandler Bill requiring the State Board of Education to set up minimum courses for all of the State Normal Schools. The following law is the one that affected the manual arts program.

Elementary Special Certificates

Educational institutions may recommend

¹ School Law of California, 1921, p. 383.

² School Law of California, 1921, p. 384.

an individual for the elementary special certificate; provided, (a) that such individual has had at least three years' instruction beyond that required for graduation from a high school maintaining a four-year course in advance of the eighth grade, or that he possess an equivalent amount of training; (b) that at least one-half of the said three years' instruction has been devoted to study or work in the special subject or subjects in which the individual is applying for certification and in such subjects as are strictly supplementary thereto, as arranged and approved by the recommending authorities of the institution in which the work was taken, or that he possess an equivalent amount of special training; (c) that two-fifths of a year of the time required to be given to the special subject or subjects has been devoted to a study of the pedagogical subjects suited to the training of an elementary school teacher; at least one-half of which time shall be devoted to practice-teaching including methods of instruction in the special subject or subjects, under competent supervision.

Secondary Special Certificates

Educational institutions may recommend an individual for the secondary special certificate; provided, (a) that such individual has had at least four years' instruction beyond that required for graduation from a high school maintaining a four-year course in advance of the eighth grade, or that he possess an equivalent amount of training; (b) that at least one-half of said four years' instruction has been devoted to study or work in the special subject or subjects in which the individual is applying for certification and in such subjects as are strictly supplementary thereto, as arranged and approved by the recommending authorities of the institution in which the work

was taken, or that he posses an equivalent amount of special training; (c) that at least two-fifths of a year of the time required to be given to the special subject or subjects had been devoted to a study of the pedagogical subjects suited to the training of a secondary school teacher; at least one-half of which time shall be devoted to practice-teaching, including methods of instruction in the special subject or subjects, under competent supervision. (Adopted August 21, 1915-Amended December 10, 1915.)¹

The passing of this law was the first important movement made toward the improvement of the State Normal Schools by the State Board of Education.

In 1917 the State Board of Education revised the laws concerning the recommendation for the special certificates; because the revisions were so inter-woven with the 1915 requirements, the law is quoted as follows:

Elementary Special Certificates.

Educational institutions may recommend an individual for the elementary special certificate; provided, (a) that such individual has had at least three years' instruction beyond that required for graduation from a High school maintaining a four-year course in advance of the eighth grade, or that he possess an equivalent amount of training; (b) that at least one-half of the said three years' instruction has been devoted to study or work in the special subject or subjects in which the individual desires certification and in such subjects as are strictly supplementary thereto, or that he possess an equivalent

¹ The Lux School of Industrial Training, 1916, p.18-19.

amount of such special training; (c) that two-fifths of a year of the time required to be given to the special subject or subjects had been devoted to a study of the pedagogical subjects suited to the training of an elementary school teacher; at least one-third of which time shall be devoted to practice-teaching, including methods of instruction in the special subject or subjects under competent supervision; provided, further, that institutions may be authorized by the State Board of Education to recommend individuals for certification in oral teaching of the deaf and in play and playground management upon qualifications other than those set forth above; and provided further, first, that where teaching or practical experience is accepted as an equivalent for a part of the collegiate requirement specified under (a) above, the same shall not be accepted in lieu of more than one and one-half years of said requirement, nor shall it be substituted at more than half value; second, that where study or work in the special subject in the secondary school period teaching or practical experience is accepted in lieu of a part of the requirement in the special subject specified under (b) above, the same shall not be substituted at more than half value; and, third, that where teaching experience is accepted in lieu of the pedagogical requirement specified under (c) above, no less than one year of such experience shall be substituted for one-half of said requirement and no less than two years of said experience shall be substituted in lieu of the entire pedagogical requirement.

Secondary Special Certificates.

Educational institutions may recommend an individual for the secondary special certificate; provided, (a) that such individual has had at least four years' instruction beyond that required for

graduation from a high school maintaining a four-year course in advance of the eighth grade, or that he possess an equivalent amount of training; (b) that at least one-half of said four years' instruction has been devoted to study or work in the special subject or subjects in which the individual desires certification and in such subjects as are strictly supplementary thereto, or that he possess an equivalent amount of such special training; (c) that at least two-fifths of a year of the time required to be given to the special subject or subjects had been devoted to a study of the pedagogical subjects suited to the training of a secondary school teacher; at least one-third of which time shall be devoted to practice-teaching including methods of instruction in the special subject or subjects, under competent supervision; provided further, first, that where teaching or practical experience is accepted as an equivalent for a part of the collegiate requirement specified under (a) above, the same shall not be accepted in lieu of more than two years of said requirement, nor shall it be substituted at more than half value; second, that where study or work in the special subject in the secondary school period, or teaching or practical experience is accepted in lieu of a part of the requirement in the special subject specified under (b) above, the same shall not be substituted at more than half value; and, third, that where teaching experience is accepted in lieu of the pedagogical requirement specified under (c) above, no less than one year of such experience shall be substituted in lieu of one-half of said requirement and no less than two years of said experience shall be substituted in lieu of the entire pedagogical requirement.

Manual and Fine Arts Type.

A certificate to teach any subject under this type will authorize the holder thereof to teach such drawing, mathematics and accounting as are an essential part of such subject and for which separate credit is not given.

Elementary Grade: General manual training, including bench work in wood and cabinet work and such other manual work of a pre-vocational character as may be included in such a course; metal art and craft work; leather art and craft work; clay art and craft work; basketry and weaving; freehand drawing, painting and design; mechanical drawing.

Secondary Grade: Manual training, limited to bench work in wood and cabinet work, and such construction of a pre-vocational character as may be included in such a course; wood working machinery and wood manufacture; wood turning and pattern making; machine shop work; forging; foundry work; sheet metal work; bookbinding; printing; mechanical drawing; architectural drawing; machine design; wood carving; metal art and craft work; leather art and craft work; clay art and craft work; book art and craft work; freehand drawing, painting, design, modeling and sculpture; basketry and weaving; primary construction.¹

In this same year (1917) the State Board of Education issued a bulletin containing a list of the schools authorized to recommend individuals for certification in California.² The California schools then authorized to recommend individuals for manual arts certificates

¹ California State Board of Education. Bulletin No. 10, September 8, 1917, p. 3-4-5.

² California State Board of Education. Bulletin No. 11, 1917, p. 1 ff.

(elementary and secondary) were the following State Normal Schools; Chico, Fresno, Humboldt, Los Angeles, Santa Barbara, San Diego, and San Jose. The "California School of Mechanical Arts and Lux School of Industrial Training", in San Francisco, offered the elementary and secondary certificates. (That school later became a technical school and dropped teacher-education). Leland Stanford Junior University offered a secondary certificate, but most of the manual arts subjects were handled in conjunction with San Jose State Normal School. The University of California, the University of Southern California, and the College of the Pacific all offered special certificates with one year of graduate work, but it was possible by arranging the program correctly for an individual to receive a general secondary certificate with one year of graduate study.

There were seven other institutions authorized to issue special certificates in the "Manual and Fine Arts", but all of these programs were intended for the fine arts rather than the manual arts. They are not, therefore, included in this study.

It is interesting to note that some of the institutions authorized to offer special certificates

in manual arts did so only in a few special cases. This was due mainly to lack of facilities for the training of such teachers.

In checking over the records of Chico, Fresno, Humboldt, and San Diego State Normal Schools it was found that prior to 1917 the special certificate was given only by special dispensation, and after that year (1917) there was no mention of Chico or Humboldt State Normal Schools having offered or given a special certificate in manual arts.

During the year 1919, the State Legislature changed the name of the Santa Barbara State Normal School of Manual Arts and Home Economics to the Santa Barbara State Normal School. In this same year the Los Angeles State Normal School was discontinued.

In the place and stead and on the site of the Los Angeles State Normal School the regents of the University of California shall, during the year commencing July 1, 1919, and thereafter, maintain and conduct at Los Angeles a branch of the University of California under such designation as shall be fixed by the regents for the purpose of providing, and at which the regents shall provide such freshman and sophomore courses of university grade as they may from time to time deem proper; and at which there shall also be given courses designed to prepare students for the profession of public instruction in the

kindergartens, elementary and intermediate schools of the State of California.

.....
 Courses leading to special high school certificates shall also be given and when such courses are duly accredited by the state board of education persons worthily completing the same shall receive credentials therefor from the regents which shall be of equal value in securing special certificates to teach in the secondary schools of this state with credentials given for the completion of such general courses in any of the normal schools.¹

In 1919 the State Board of Education revised the laws governing the rules and regulations for recommendation for the special certificate. The only change noted in the manual arts program was the addition of auto mechanics and auto electrics to the training program for the special secondary credential.² With the exception of the addition of these two subjects the requirements were exactly the same as prescribed by the 1917 rules and regulations.*

In the period from 1911 to 1921 the manual arts teacher-education program had developed from brief requirements set up by the individual institutions to a much broader program under the control of the State Board of Education.

¹ School Law of California, 1921, p. 379.

² Santa Barbara State Normal School. Announcement of Courses, 1920, p. 46 (Extract from California State Department of Education, Bulletin No. 10-S, 1919)

* Refer to p. 12 for 1917 requirements.

During this ten year period the entrance requirements for all of the institutions had been raised to at least high school graduation, and by 1915 in order to secure a special certificate in the manual arts subjects it was necessary to have one year of training for the elementary certificate and two years of training for the secondary certificate beyond the ordinary two year normal program. This made it necessary for a student to attend an institution of higher learning for at least three years for an elementary special credential and at least four years for a secondary special credential.

The State Department of Education was created by a Legislative act in 1921. The State Superintendent of Public Instruction became the director of the Department. This act placed control of the normal schools, previously exercised by the boards of trustees, in the hands of the Director of Education and the State Board of Education.¹ The same legislature changed all of the State Normal Schools of California to the State Teachers Colleges of California.²

¹ School Law of California, 1921, p. 19 ff.

² School Law of California, 1921, p. 373.

CHAPTER III

THE EXPANSION OF THE INDUSTRIAL ARTS TEACHER-EDUCATION
PROGRAM IN THE STATE TEACHERS
COLLEGES OF CALIFORNIA

Up to the founding of the State Teachers Colleges in 1921 the term "Manual Arts" was most commonly used to label the program of shop work in secondary schools, and in teacher-education. From the time of its origin in the public school program, shop work has been called by many names. Examples are Manual Training, Manual Arts, Community Mechanics, Mechanical Arts, Pre-Vocational Arts, Occupations and Home Mechanics, and the present term Industrial Arts. For the sake of clarity it was found more convenient, in the preceding chapters, to speak of the program as "Manual Arts". For the same reason, and because of its more common acceptance in the profession as a whole, the term "Industrial Arts" will be used in the balance of this study. At the same time it should not be forgotten that the term has come into general usage only in the last few years.

The Bachelor of Arts Degree

Santa Barbara State Teachers College in 1922

offered a degree in conjunction with the industrial arts special secondary credential. That was the first example of a Teachers College in California offering a Bachelor of Arts degree with provision for major work in Industrial Arts leading to a special credential in that field. The degree program was optional. It was not necessary to work for a degree in order to secure the special credential.

In 1922 all teacher-training courses at the University of California Southern Branch were placed in a Teachers College Division. By 1923 it was possible to secure a degree and a special secondary credential in Industrial Arts at the Southern Branch. The three-year course still provided for a special elementary credential. Typical courses of the special elementary program and the special secondary program are shown in Appendix A.

During the period 1918 to 1921, Chico State College had been constructing an Industrial Arts building. The building was first occupied in 1921, but not until three years later was the work set up as a separate department. In this same year (1924) the school was authorized to grant a special Industrial Arts credential with the Bachelor of Arts degree. The following year San Jose

State Teachers College was authorized to grant the same type of special credential with a degree. It is interesting to note that although San Jose State Teachers College was the first State School to have any type of industrial arts included in its program, it was the last school authorized to grant a degree with the special credential in industrial arts.

Unifying the Program

It must be understood that the industrial arts program was included to some extent in the curriculums of all of the California State Teachers Colleges, and the California Colleges and Universities, but special certification was offered only at Chico, Fresno, Santa Barbara, San Diego, and San Jose State Teachers Colleges and the University of California Southern Branch.

Although the state laws were set up for the purpose of making uniform programs of study in the colleges, the courses offered in the recommending institutions were by no means identical. As yet, the laws governing such recommendation were quite general.

For the elementary special credential the State Board of Education required the student to have three

years of training beyond high school graduation, at least half of which must be in industrial arts education. Of the half allotted to industrial arts, approximately four months was required for a study of the pedagogical subjects "suited to the training of the elementary teacher". At least one-third of the time on "pedagogical subjects" was required in "practice teaching". It was possible for the student to be excused from some of the requirements provided he had sufficient teaching or practical experience.

For the "secondary special" credential it was stated that the student should have four years of training beyond high school graduation. The rest of the requirements were approximately the same as for the elementary special credential. In no instance did the State Board designate what subjects should or should not be taught in the training program leading to the recommendation for the special credential.

It soon became evident that the requirements should provide for a more unified program throughout the state. In order to unify the industrial arts requirements then in effect, it was necessary for the State Board of Education to specify certain subjects which must be

included in the training program. It was impossible to lay down hard and fast rules in regard to each subject; it was therefore necessary to group the subjects with a specified number of hours of training required in each group. In 1923 the following specifications were made in regard to the special industrial arts credentials. While the language of the State Department of Education still used "Pre-Vocational" as the descriptive term for these credentials, the specifications were really for "Industrial Arts".

SPECIAL CREDENTIALS

Pre-Vocational Type (Industrial Arts)

OCCUPATIONS AND HOME MECHANICS

Applicants for Credentials of this type and of either grade must meet the conditions prescribed under the General, Professional, and Special Requirements specified below for that grade.

A Credential to teach any subject specified under this type will authorize the holder thereof to teach to his classes such drawing and mathematics as are an essential part of such subject and for which separate credit is not given.

ELEMENTARY AND JUNIOR HIGH SCHOOL GRADE

OCCUPATIONS AND HOME MECHANICS

General Requirements

(a) Schooling totaling at least seven years beyond that required for the completion of the eighth year of the elementary school course, or

(b) Six years of such schooling, or its equivalent, and two years of successful experience in teaching the subject or subjects named in the Credential.

Professional Requirements

The above general requirements must include at least twelve semester hours of courses in the Department of Education distributed approximately as follows:

	Semester Hours
1. Educational Psychology and Principles of Teaching.....	3
2. Public Education in California.....	2
3. Courses Designed Particularly to prepare for Teaching in the Special Field and Practice Teaching...	5
4. Electives in Pro- fessional Education.....	2
Total.....	<u>12</u>

(Credit for four (4) semester-hours of practice teaching may be allowed for persons who have had one or more years of successful teaching experience.)

Special Requirements

For Limited Class--A minimum of training in each of a sufficient number of the special subjects listed below (Elementary and Junior High School Grade) to total twenty (20) or more semester-hours.

In this class, only short-term Credentials may be granted and only in the subjects completed.

For General Class--A minimum of training of forty (40) semester-hours distributed approximately as follows:

	Semester-Hours
1. Electrical Work.....	2
2. Iron Work (forge, sheet-metal, pipe fitting, machine work).....	7
3. Wood Work.....	7
4. Upholstering.....	2
5. Painting, Finishing and Decorating.....	2
6. Leather Work (shoe repair).....	1
7. Clay and Cement Work...	2
8. Freehand and Mechanical Drawing.....	4
9. Art Crafts.....	3
10. Basketry and Weaving...	2
11. Paper and Cardboard Construction.....	2
12. Study of Occupations...	6
Total.....	<hr/> 40

Printing--An applicant qualifying under any of the above classes may have Printing added to his Credential if he has completed at least six (6) semester-hours in Printing.

SECONDARY SCHOOL GRADE OCCUPATIONS AND HOME MECHANICS

General Requirements

(a) Schooling totaling at least eight years beyond that required for the completion of the eighth year of the elementary school course, or

(b) Six years of such schooling or its equivalent and four years of successful experience in teaching the subject or subjects named in the Credential, or two years of practical experience in the field of said subject or subjects, or

(c) Four years of such schooling and eight years of vocational experience in

one or more of the special fields listed below, or

(d) An equivalent combination of such schooling and experience.

Professional Requirements

The above General Requirements must include at least fifteen (15) semester-hours of courses in the Department of Education distributed approximately as follows:

	Semester Hours
1. Principles of Secondary Education.....	2
2. Educational Psychology and Principles of Teaching.....	3
3. Public Education in California.....	2
4. Courses Designed Particularly to Prepare for Teaching in the Special Field.....	2
5. Practice Teaching.....	4
6. Electives in Professional Education.....	2
Total.....	<hr/> 15

(Credit for practice teaching may be allowed for persons who have had one or more years of successful teaching experience.)

Special Requirements

For Limited Class--A minimum of training in each of a sufficient number of the special subjects listed below (Secondary Grade) to total twenty-five (25) or more semester-hours.

In this class, only short-term Credentials may be granted and only in the subjects completed.

For General Class--A minimum of training of fifty-six (56) semester-hours distributed approximately as follows:

	Semester Hours
1. Operation, Upkeep, and	

	Semester Hours
Repair of Automotive Machinery and Gas Engines.....	12
2. Operation, Upkeep, and Repair of Pumps and the Construction and Installation of Irrigation Equipment.....	1
3. Building and Furniture Construction and Repair...	10
4. Painting and Furnishing...	2
5. Auto and Electrics.....	4
6. Pipe Fitting, Plumbing, and Sheet Metal.....	3
7. Shoe Repairing.....	1
8. (a) Supplemental Forging and Oxy-Acetylene Welding.....	1
(b) Supplemental Machine Shop.....	4
9. Elementary Topographical, Architectural, and Machine Drafting.....	6
10. Supplemental Science.....	4
11. Supplemental Mathematics..	2
12. Study of Occupations.....	6
13. At least four months of commercial garage experience.....	-
Total.....	56

Printing--An applicant qualifying under any of the above classes may have Printing added to his Special Credential if he has completed at least ten (10) semester-hours in a course in Printing.

Note--In exceptional cases, the Commission of Credentials is authorized to accept equivalents for certain requirements listed in this bulletin.¹

The regulations of 1923 did not provide for a

¹ California State Board of Education. Bulletin No. 10-0, October, 1923, p. 4-5-6.

standardized program in industrial arts in the institutions authorized to grant special credentials. They did provide, however, for a minimum number of semester-hours to be spent in the shop subjects and further strengthened the program by placing a minimum number of semester-hours of training on the professional subjects. This law unified the state program of industrial arts teacher-education to a greater extent than the previous laws, but it did not restrict the institutions in any way as to what subjects should be taught. The regulations stated that the semester-hours should be distributed "approximately as follows", but the recommending institution was not compelled to follow those suggestions. In some cases it was even possible to substitute "equivalents" for some of the subject-matter specified. As a rule, however, the suggested program of studies was followed as nearly as possible.

These laws were in effect until 1925. In that year some slight changes were made, but the main body of the laws remained practically the same. For the elementary and junior high school credential the General Requirements were changed slightly. Whereas the 1923 law stated

(a) Schooling totaling at least seven years beyond that required for the completion of the eighth year of the elementary school course, or

(b) Six years of such schooling, or its equivalent, and two years of successful experience in teaching the subject or subjects named in the Credential,¹

the 1925 law changed this to

(a) Three years of collegiate training beyond graduation from a four year high school, or

(b) Two years of such training, or its equivalent, and two years of successful experience in teaching the subject or subjects, named in the Credential.²

The main difference between these two laws seems to be only in the wording, but in part (a) a high school education and three years of college was required in 1925, while in 1923 a high school education was not a definite requirement. In part (b) the phrase "or its equivalent" permits the individual institution to make the decision under either the 1925 or the 1923 law.

Under the Professional Requirements only one change was noted. A course in "Education for Citizenship" was suggested to replace "Electives in Professional Education". This did not affect the program greatly as

¹ California State Board of Education. Bulletin No. 10-0, October, 1923, p. 4

² California State Board of Education. Bulletin No. 10-Pre-V, January 1, 1925, p. 5.

the number of semester hours (12) remained unchanged.

The Special Requirements remained unchanged for the "Limited" credential, but the "General" credential was made more specific. The 1923 law required "A minimum of training of forty semester-hours"; the 1925 law changed this to "A minimum of forty semester-hours of special training suited to the needs of teachers of elementary and junior high school students". The suggested distribution of semester-hours remained unchanged.

The requirements of the special secondary credential were changed much the same as for the special elementary credential. The General Requirements in 1923 were

(a) Schooling totaling at least eight years beyond that required for the completion of the eighth year of the elementary school course, or

(b) Six years of such schooling of its equivalent and four years of successful experience in teaching the subject or subjects named in the Credential, or two years of practical experience in the field of said subject or subjects, or

(c) Four years of such schooling and eight years of vocational experience in one or more of the special fields listed below, or

(d) An equivalent combination of such schooling and experience.¹

¹ California State Board of Education. Bulletin No. 10-0, October, 1923, p. 5.

The 1925 General Requirements were changed to

(a) Four years of collegiate training beyond graduation from a four year high school, or

(b) Two years of such training, or its equivalent, and either (1) four years of successful experience in teaching the subject or subjects, named in the Credential, or (2) two years of practical experience in the field of said subject or subjects.¹

Parts (c) and (d) were omitted in the 1925 law.

The Professional Requirements for the special secondary credential were changed in exactly the same manner as the special elementary requirements. The course "Education for Citizenship" was suggested to replace "Electives in Professional Education". The number of semester-hours (15) remained unchanged.

Under Special Requirements the "General" classification was changed from "A minimum of training of fifty-six semester-hours" to "A minimum of fifty-six semester-hours of special training suited to the needs of teachers of junior and senior high school students". The suggested course of study remained the same.

A note attached to the 1923 laws stated "in exceptional cases, the Commission of Credentials is authorized to accept equivalents for certain

¹ California State Board of Education. Bulletin No. 10-Pre-V, January 1, 1925, p. 6.

requirements". What these "certain requirements" were is not explained, but this note was left out of the 1925 laws. Whether or not this practice was continued is not stated.

There was no further change in industrial arts teacher-education until 1928. In that year the State Board of Education passed the following law in regard to special certification in industrial arts education.

SPECIAL CREDENTIAL IN INDUSTRIAL ARTS EDUCATION

An applicant for a special credential in Industrial Arts Education must submit from a teacher training institution approved by the California State Board of Education for training teachers of industrial arts education:

I. A certificate that he is physically and mentally fit to teach.

II. A recommendation by the school of education of the institution that he shows promise of success as a teacher with verification of:

- A. The completion of a four-year College course, with a bachelor's degree, or the equivalent, preceded by graduation from a four-year high school.
- B. A minimum of sixteen semester hours of work in the fields of English, science, social science, and physical education.
- C. Fifteen semester hours of professional work in education, including:
 1. A course dealing with the aims, scope, and desirable outcomes of the elementary and the secondary school.

2. Directed teaching in Industrial Arts, four semester hours.
3. Methods courses in Industrial Arts.
4. Other courses in education organized for the training of public school teachers.
- D. A minimum of 50 semester hours of special technical training suited to the needs of teachers of junior and senior high school students, distributed approximately as follows:

Required shop subjects-

1. Automobile work ¹	6 sem. hrs.
2. Woodwork.....	3 sem. hrs.
3. Drawing.....	3 sem. hrs.
4. Electricity.....	3 sem. hrs.
5. Machine Shop.....	3 sem. hrs.
6. Sheet Metal.....	2 sem. hrs.
Total.....	20 sem. hrs.
Additional Requirements.....	30 sem. hrs.

Thirty semester hours of shop electives selected from the list below or made up of additional courses in the subjects listed in the required group above:

1. Battery Construction and Repair.
2. Vulcanizing and Tire Repair.
3. Home Mechanics and General Shop.
4. Forging and Welding.
5. Wood Finishing and Painting.
6. Leather Work and Shoe Repair.
7. Upholstery and Caning.
8. Construction Work for Elementary Grades.
9. Art Metal Work.
10. Pattern Making and Foundry Work.
11. Pumps and Irrigation Equipment.
12. Farm Mechanics.

¹ In automotive work there is required not less than 416 clock hours of practical experience in general automobile work in a commercial garage before a credential to teach this subject in senior high schools will be granted.

- 13. General Shop.
- 14. Printing.*

In case of applicants who wish to limit their teaching to not more than three activities, the thirty elective units may be arranged as follows:

One major group in one	
specific craft.....	12 sem. hrs.
Two minor similar	
groups of nine units	
each.....	<u>18</u> sem. hrs.
Total.....	30 sem. hrs.

Authorization for Service.

This credential authorizes the holder to teach industrial art subjects in the public schools of California. In case of further specialization, the field will be indicated upon the credential as recommended by the teacher training institution.

Term.

This credential will be issued for a period of two years and may be renewed thereafter for five-year periods upon verification of five months of successful teaching experience in the public schools of California.

LIMITED CREDENTIAL IN INDUSTRIAL ARTS EDUCATION

An institution approved by the California State Board of Education for training teachers of Industrial Arts Education may, at its discretion,

* Note--A minimum of eight units of college, work plus not less than 416 clock hours of of practical experience in a commercial shop are required for certification in printing.

recommend for a limited credential an applicant provided that he has the training and experience indicated under either "I" or "II" below:

I. The Practical Craftsman.

- A. Graduation from a four-year high school or its equivalent, and a minimum of five years of trade experience in an approved trade; and the passing an approved trade test.
- B. Twelve units in education selected from the requirements as listed in the special credential in Industrial Arts Education, (including four units of directed teaching).
- C. Twelve units of related technical subjects, such as drawing and design; related mathematics and science; economics and history of the trade; material of the trade; manipulative experience.
- D. Six units in social sciences, English and health studies.

II. The holder of a Vocational Education Credential (who has completed the required trade and industrial vocational teacher training).

- A. Verification of four years schooling beyond the eighth grade.
- B. Twenty-four semester hours of work, eighteen of which to be selected by the institution from B,C,D, under "I" above. (The institution to evaluate applicant's education in terms of the twenty-four semester hours.)

Authorization for Service.

This credential authorizes the holder to teach his or her trade or industrial occupation as a subject in an industrial

arts program in the public schools of California.

Term.

1. This credential may be issued for a one-year period and may be renewed for a five-year period upon verification of a year of successful teaching experience of industrial arts in the public schools of California.

2. In case of an emergency request from a superintendent of schools or a high school principal, a credential may be granted for one year, renewal granted from year to year until the applicant has completed the full requirements for such a credential.

Under I and II the applicant must receive the recommendation of the approved teacher training institution and the recommendation for renewal from the institution making the recommendation for the original credential.¹

An outstanding feature of the 1928 rules and regulations was the elimination of the special elementary credential. This was a great step forward in the industrial arts education program. Another point in favor of this law was the section that required certain shop subjects to be taught in all of the recommending institutions. This one point was probably the greatest step toward a unified program.

¹ California State Department of Education. Division of Teacher Training and Certification, Bulletin No. H-2, September 15, 1928, p. 18-19-20.

The semester-hours of training in the major field were changed from fifty-six to fifty hours. That was an increase over the requirements for the special elementary credential, but it was less than the requirements for the special secondary credential. It should be noted that a bachelor's degree, or the equivalent, was now one of the requirements.

CHAPTER IV

THE PROFESSIONALIZATION OF INDUSTRIAL ARTS
TEACHER-EDUCATION

Previous chapters have dealt with special certification (in California) for industrial arts teachers over a period of approximately twenty years. Although the California State Board of Education had passed several laws governing industrial arts, it was not until 1928 that the State Board included academic subjects in the industrial arts requirements. This was the first step taken toward putting industrial arts teacher-education on a more professional basis..

Under the 1928 law for special certification in industrial arts, section "B" of Part II required "a minimum of sixteen semester-hours of work in the fields of English, science, social science and physical education".¹ Two years later requirements for the academic subjects were raised. In bulletin H-1, 1930, the State Board of Education specified that "courses to be completed in lower division aggregate 35 units, and include 12 units of social science, 12 units of natural science, 6 units of English, 3 units of

¹ California State Department of Education. Bulletin No. H-2, September 15, 1928, p. 18.

psychology and 2 units of physical education".¹ These latter requirements were not peculiar to the industrial arts program, but were set up for all teaching programs.

At that time (1928 to 1930) the requirements for the technical subjects in industrial arts were not changed, but on January 6, 1934 the hours of training in the industrial arts field were lowered.

The special departmental majors are limited to 36 to 40 semester hours of required courses and 8 semester hours of departmental electives.²

In June of that same year (1934) the requirements were again changed. This change affected both the departmental and the academic requirements.

Required courses to be completed in lower division aggregate 39 units, and include 14 units of social sciences, 14 units of natural sciences, 6 units of English, 3 units of psychology and 2 units of physical education.

The special departmental majors are limited to 24 to 40 semester hours of required courses.³

Industrial arts education required the maximum number of semester hours permitted under this law.

¹ Santa Barbara State Teachers College. Announcement of Courses, 1933-34, p. 29.

² Santa Barbara State Teachers College. Announcement of Courses, 1934-35, p. 31.

³ State Board of Education. Bulletin No. 12, June 15, 1934, p. 8.

The Scope of Industrial Arts Teacher-Education.

All of the California schools preparing students for teaching, have included industrial arts in their curriculums. While some of these schools do not offer the work in sufficient amount to meet industrial arts certification requirements, they have included a fair sampling of the program for the purpose of giving the students of other fields a broader background. These courses are not necessarily technical, and are apparently given with the philosophy expressed by Bennett as follows:

There is an industrial training which is neither technical nor professional, which is calculated to make better men and better citizens of the pupils, no matter what calling they may afterward follow; which affects directly, and in a most salutary manner, the mind and character of the pupil, and which will be of constant service to him through all his life, whether he be wage worker or trader, teacher or clergyman. The training of the eye and of the hand are important and essential elements in all good education.¹

This quotation was published in 1886, but the importance of its idea is as valuable today as it was then. Industrial Arts teacher-education in California has

¹ Bennett, Charles Alpheus. History of Manual and Industrial Education 1870 to 1917, p. 413. (taken from "The Century" magazine)

expanded, until, at the present time it provides for all the functions previously listed.

All of the teacher-education programs offer the student a chance to benefit from the industrial arts subjects. Industrial arts education is offered as a major, one of a combination of majors, or as a minor in work toward the general secondary credential; as a combination major, or as a minor in work toward any special credential; as a combination major, or as a minor in work toward the general elementary credential; as elective subjects toward any credential, or credentials, or degree program.

The Present Program

In 1928 there were six California schools which offered the special credential in industrial arts education. They were Chico, Fresno, Santa Barbara, San Diego, and San Jose State Teachers Colleges and the University of California at Los Angeles (the University of California Southern Branch until 1927). The following year (1929) San Diego State Teachers College discontinued the special credential, and three years later, in 1932, Fresno State Teachers College did likewise.

The California State Teachers Colleges were all changed to "State Colleges" by a legislative act of 1935. In that same year the requirements in force at present were set up for the special secondary credential in industrial arts education.

SPECIAL SECONDARY CREDENTIAL IN
INDUSTRIAL ARTS EDUCATION

(Requirements Effective July 1, 1935)

An applicant for a special secondary credential in industrial arts education must submit:

- I. A certificate from a physician licensed to practice medicine and surgery that the applicant is physically and mentally fit to engage in teaching service.
- II. A recommendation from the school or department of education of an institution approved by the California State Board of Education for training teachers of industrial arts education, with verification of:
 - A. The completion of a four year college course with a bachelor's degree.
 - B. A minimum of sixteen semester hours of work in the fields of English, science, social studies, and physical education.
 - C. Fifteen semester hours of professional work in education including:
 1. A course dealing with the aims, scope, and desirable outcomes of the elementary and the secondary school.

2. Directed teaching in industrial arts, six semester hours.
 3. Methods courses in industrial arts.
 4. Other courses in education organized for the training of public school teachers.
- D. Forty semester hours of special technical training suited to the needs of teachers of junior and senior high school students, distributed approximately as follows:

Basic Technical Requirements	
	Semester Hours
1. Automobile ¹ and transportation....	3
2. Woodwork.....	3
3. Drawing.....	3
4. Electricity and radio.....	3
5. Metal work.....	3
Total.....	15
Additional requirements.....	25

Twenty-five semester hours of shop electives made up of additional courses in the subjects listed in the required group above, or selected from the following or similar subjects:

1. Battery construction and repair
2. Vulcanizing and tire repair
3. Home mechanics and general shop
4. Forging and welding
5. Wood finishing and painting
6. Leather work

¹ In automotive work not less than 416 clock hours of practical experience in general automobile work in a commercial garage is required before a credential to teach this subject will be granted.

7. Upholstery and caning
8. Construction work for elementary grades
9. Art metal work
10. Pattern making and foundry work
11. Pumps and irrigation equipment
12. General shop
13. Printing¹

Authorization for service. This credential authorizes the holder to teach industrial arts subjects as indicated upon the credential in the public schools of the state.

Term. This credential may be issued for a period of two years and may be renewed thereafter for periods of five years upon verification of at least five months of successful teaching experience in the public schools of California.

LIMITED CREDENTIAL IN INDUSTRIAL ARTS EDUCATION

(Requirements Effective July 1, 1935)

An institution approved by the State Board of Education for training teachers of industrial arts education may, at its discretion, recommend for a limited credential an applicant provided that he has the training and experience indicated under either I or II below:

- I. The Practical Craftsman
 - A. Graduation from a four year high school or its equivalent.
 - B. A minimum of five years of acceptable trade experience in an approved trade or trade field,

¹ A minimum of eight semester hours of college work plus not less than 416 clock hours of practical experience in a commercial shop is required for certification in printing.

and the passing of the approved trade tests.

- C. Sixty semester hours of teacher training, distributed as follows:

	Semester Hours
English.....	6
Social studies.....	9
Mathematics.....	3
Science.....	6
Education.....	15
Practice teaching...	6
Physical education..	2
Hygiene.....	2
Related technical subjects.....	11
Total.....	60

II. The Holder of a Vocational Arts Credential

- A. Graduation from a four year high school or its equivalent.
- B. Twenty-two semester hours of work in vocational teacher training.
- C. A minimum of forty-four semester hours of work selected by the institution from B under I above, after credit has been granted for sixteen semester hours of the work completed in vocational teacher training.

Authorization for Service. This credential authorizes the holder to teach the trade or industrial occupation indicated upon the credential in an industrial arts program in the public schools of the state.

Term.

1. This credential may be issued for a one year period and may be renewed for a five year period upon verification of one year of successful teaching experience of industrial arts subjects in the public schools of California.
2. In case of an emergency request from a superintendent of schools

or a high school principal, a credential may be granted for one year with renewal granted from year to year until the applicant has completed the full requirements for such credential.

Under I and II the applicant must receive the recommendation of an approved teacher training institution and the recommendation for renewal from the institution making the recommendation for the original credential.¹

These requirements are in effect in Chico, Santa Barbara, and San Jose State Colleges, and the University of California at Los Angeles, at the present time.

In the comparatively short period of its existence, industrial arts education has developed from a few technical subjects to a broad, well rounded program. The purpose of this program is to furnish professionally trained teachers of industrial arts for the public schools of California. The course of study is designed to provide a good general background, professional training in teaching, and specialization in the technical subjects of industrial arts. The entire period of training embodies the highest ideals of the teaching profession.

¹ State of California Department of Education. Bulletin No. 12, June 15, 1935, p. 30-31-32-33.

CHAPTER V

SUMMARY

The present study was undertaken to record in readable form authentic information concerning Industrial Arts Teacher-Education in California, from its earliest existence as a "Manual Arts" program to its present status as a professional program in teacher-education.

The study was traced under four headings, (1) Background of the Problem, (2) The Foundation of the Manual Arts Teacher-Education Program in California, (3) The Expansion of Industrial Arts Teacher-Education in California, (4) The Professionalization of Industrial Arts Teacher-Education in California. Material under these headings was obtained from California Board of Education Bulletins, California School Law, college catalogues, unpublished Masters Theses, and published works on industrial arts education.

Under (1), Background of the Problem, is discussed the first manual training program in an institution of higher learning (in California); the establishment of Throop Polytechnic Institute, the type of work it offered and its purpose; the Anna S.C. Blake Training School, the purpose for which it was originated, and

the manual-training subjects that were offered.

Under (2), The Foundation of the Manual Arts Teacher-Education Program in California, is found the first evidence of teacher-education in the manual arts subjects in the normal schools. The Santa Barbara State Normal School of Manual Arts and Home Economics is discussed in relation to its entrance requirements and the type of training it offered.

Between 1911 and 1915 Fresno and Humboldt State Normal Schools were established, and in 1915 the State Board of Education was given permission to set up minimum courses for all of the State Normal Schools. In 1917 these laws were revised. Also in 1917, the State Board of Education authorized twelve California schools to offer teaching certificates in the manual arts subjects. It was found however, that some of these schools issued the certificate only in special cases.

In 1919 the name of the Santa Barbara State Normal School of Manual Arts and Home Economics was changed to the Santa Barbara State Normal School, and in this same year the Los Angeles State Normal School was discontinued in favor of the University of California

Southern Branch. Also in 1919, the laws governing the special certificates in manual arts were revised, but the changes made were very slight.

The State Department of Education was created by a Legislative Act of 1921. The same legislature changed all of the State Normal Schools of California to the State Teachers Colleges of California.

Under (3), The Expansion of the Industrial Arts Teacher-Education Program, the study discusses developments in the State Teachers Colleges, the establishment of the Bachelor's degree, and the unifying of the program of industrial arts.

During the period 1921 to 1928 the State Board of Education changed the requirements of industrial arts education three times. In 1923 the laws were made up to provide for a minimum number of semester-hours of training in the industrial arts field. In 1925 these laws were revised with some minor changes, but the main body of the laws remained the same. In 1928 the laws were completely changed, eliminating the special elementary credential and requiring a bachelor's degree, or the equivalent. Academic subjects were specified for the first time.

Under (4), The Professionalization of Industrial Arts Teacher-Education in California, the academic requirements are considered in relation to the broadening program of industrial arts.

The industrial arts program is also considered in relation to training other than teacher certification in industrial arts. Elective courses for broadening the background of other programs constituted a major purpose in this respect.

The final consideration was with the present requirements, established in 1935. In that same year the State Teachers Colleges were changed to the "State Colleges", closing the present chapter in the developments of the industrial arts teacher-education program in California. The present programs, developed over a period of approximately forty years, seem to indicate that industrial arts is a vital part of the teacher-education program in California.

APPENDIX "A"

University of California, Southern Branch
for the
Academic Year, 1922-23

Elementary Industrial Arts Training Curriculum

The Short Curriculum Leading to Recommendation
for the Elementary Special Teaching Credential
in Industrial Arts.

Freshman Year
First Semester

Course	Units
Subject A (English Composition).....	-
Psychology X (The Psychology of Study)..	1
Art A (Freehand Drawing).....	2
Art 1a (Art Appreciation and History)..	2
Art 6a (Design).....	2
Art 8a (Stage Craft).....	1
Art 9 (Elementary Construction).....	2
Psychology 2 (General Psychology).....	3
Physical Education 1 (Hygiene), men....	1
Physical Education 2 (Hygiene), women..	3
Physical Education, men.....	$\frac{1}{2}$
Military Science 1a (Basic Course), men	$1\frac{1}{2}$
Recreation (2 hours per week), women...	$\frac{1}{2}$
Total.....	(M) 16--(W) 16 $\frac{1}{2}$

Second Semester

Course	Units
Art B (Freehand Drawing).....	1
Art 1b (Art Appreciation and History)..	2
Art 3a (Costume Appreciation and History).....	1
Art 6b (Design).....	2
Art 17 (House Furnishing).....	1
English 1a (Advanced Composition).....	3
Psychology 26 (Esthetics).....	3
Physical Education, men.....	$\frac{1}{2}$
Physical Education 10 (Physical Education), women.....	2

Military Science 1b (Basic Course), men..	$1\frac{1}{2}$
Recreation, women.....	$\frac{1}{2}$
Total.....	(M)14--(W)15 $\frac{1}{2}$

Sophomore Year
First Semester

Course	Units
Art 2a (Lettering).....	1
Art 7a (Sketching).....	1
Art 8b (Stage Craft).....	1
Art 12a (Design).....	2
Art 21a (Pottery).....	2
Art 29a (Bookbinding).....	2
Minor Departmental Sequence.....	2
Education 11 (Principles of Teaching)....	3
Physical Education, men.....	$\frac{1}{2}$
Physical Education 11 (Physical Education), women.....	2
Military Science 2a (Basic Course), men..	$1\frac{1}{2}$
Recreation, women.....	$\frac{1}{2}$
Total.....	(M)16--(W)16 $\frac{1}{2}$

Second Semester

Course	Units
Art 12b (Design).....	2
Art 21b (Pottery).....	2
Art 29b (Bookbinding).....	2
Education 14 (Civic Education).....	2
Psychology 30 (Educational Psychology)...	3
Minor Departmental Sequence.....	4
Physical Education, men.....	$\frac{1}{2}$
Military Science 2b (Basic Course), men..	$1\frac{1}{2}$
Recreation, women.....	$\frac{1}{2}$
Total.....	(M)17--(W)15 $\frac{1}{2}$

Junior Year
First Semester

Course	Units
Art 39a (Weaving).....	2

Art 49 (Basketry).....	2
Art 58a (Textile Decoration).....	1
Art 60a (Principles of Art Education).. <td>3</td>	3
Art 68 (Stage Craft).....	1
Art 69a (Leather).....	2
Teaching A90c (Elementary Industrial Arts Teaching).....	5
Total.....	<hr/> 16

Second Semester

Course	Units
Art 39b (Weaving).....	2
Art 60b (Principles of Art Education).. <td>3</td>	3
Education 40 (The Administration of Public Education).....	3
Minor Technical Sequence.....	4
Teaching A90d (Elementary Industrial Arts Teaching).....	5
Total.....	<hr/> 17
Grand total.....	96

Secondary Special Mechanic Arts Training Curriculum

The Four-Year Curriculum Leading to the Baccalaureate Degree and to Recommendation for the Secondary Special Teaching Credential in Mechanic Arts.

Freshman Year
First Semester

Course	Units
Subject A (English Composition).....	-
Psychology X (The Psychology of Study).. <td>1</td>	1
Engineering Drawing C (Instrumental Drawing).....	2
Mathematics 1 (Advanced Algebra).....	3
Mechanical Engineering 8a (Shop Work, Pattern Making).....	2

Physics 1a (General Physics).....	3
Psychology 2 (General Psychology).. <td>3</td>	3
Physical Education, men.....	$\frac{1}{2}$
Physical Education 1 (Hygiene), men.....	1
Military Science 1a (Basic Course), men.....	$1\frac{1}{2}$
Total.....	<hr/> 17

Second Semester

Course	Units
English 1a (Advanced Composition).. <td>3</td>	3
Mathematics C (Trigonometry).....	3
Mechanic Arts 10a (Shop Work, Woodwork).....	3
Physics 1b (General Physics).....	3
Psychology 30 (Educational Psychology).....	3
Physical Education, men.....	$\frac{1}{2}$
Military Science 1b (Basic Course), men.....	$1\frac{1}{2}$
Total.....	<hr/> 17

Sophomore Year
First Semester

Course	Units
Chemistry 1a (General Chemistry)...	5
Commerce 1a (Principles of Economics).....	3
Mechanical Engineering 2 (Descriptive Geometry).....	3
Mechanical Engineering 9a (Shop Work, Iron).....	2
Physical Education, men.....	$\frac{1}{2}$
Military Science 2a (Basic Course), men.....	$1\frac{1}{2}$
Total.....	<hr/> 15

Second Semester

Course	Units
Chemistry 1b (General Chemistry)....	5
Commerce 1b (Principles of Economics).....	3
Mechanic Arts 4 (Architectural Drawing) or Mechanical Engineering 6 (Machine Design) (5).....	3
Mechanic Arts 62a (Auto Mechanics).. <td>3</td>	3
Physical Education, men.....	$\frac{1}{2}$
Military Science 2b (Basic Course, men.....	$1\frac{1}{2}$
Total.....	<hr/> 16

Junior Year
First Semester

Course	Units
Botany 1 (General Botany).....	3
Mechanic Arts 50a (Applied Electricity).....	3
Mechanic Arts 52a (Applied Mechanics).....	3
Mechanic Arts 75a (Shop Work).....	3
Mechanical Engineering 7 (Automotive Construction).....	2
Psychology 30 (Educational Psychology).....	3
Total.....	<hr/> 17

Second Semester

Course	Units
Education 14 (Civic Education).....	2
Mechanic Arts 50b (Applied Electricity).....	3
Mechanic Arts 52b (Applied Mechanics).....	3
Mechanic Arts 75b (Shop Work).....	3
Teaching MA92a (Secondary Mechanic Arts Teaching).....	5
Total.....	<hr/> 16

Senior Year
First Semester

Course	Units
Commerce 99a (Business Organization and Administration).....	3
Education 65 (Vocational Education)..	3
Mechanic Arts 90 (The Organization and Administration of Industrial Education).....	2
Teaching MA92b (Secondary Mechanic Arts Teaching).....	5
Elective (Shop Work).....	3
Total.....	<hr/> 16

Second Semester

Course	Units
Commerce 99b (Business Organization and Administration).....	3
Education 40 (The Administration of Public Education).....	3
Education 66 (Vocational and Educational Guidance).....	3
Mechanic Arts 91 (Curriculum and Methods in Industrial Education).....	2
Zoology 10 (General Biology).....	3
Total.....	<hr/> 14
Grand Total.....	128

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