

Apprenticeship Program Summary Sheet

for

South Bay Workforce Investment Board, Inc.

Division of Apprenticeship Standards (DAS)

To: Chief Eric Rood

From:

CC:

Date: March 26, 2020

Program

Name: South Bay Workforce Investment Board, Inc.

Industry(s): Bio-Medical

DAS File No.

ACTIONS

Proposed New Apprentice Program

LIST OF LABOR ORGANIZATIONS REPRESENTING ANY OF THE APPRENTICES

None

LIST OF EMPLOYER(S)

Bachem Americas, Inc, Torrence, CA

Apprenticeship Program Summary Sheet

For

South Bay Workforce Investment Board, Inc. (Bio Tech)

DISCLAIMER OF INTEREST IN THE BUILDING TRADES AND DISPATCH RESTRICTION

The South Bay Workforce Investment Board, Inc. Apprenticeship Program is not intended to train in the building and construction trades within the meaning of Labor Code section 3075, and is not eligible to dispatch apprentices to projects with public works, prevailing wage, or skilled and trained workforce requirements.

The South Bay Workforce Investment Board, Inc. Apprenticeship Program will train its apprentices to serve as fulltime employees for employers subscribing to these standards

SUMMARY

The South Bay Workforce Investment Board, Inc. Apprenticeship Training Committee oversees the apprenticeship program herein and seeks approval as a California-registered Apprenticeship Program from the Department of Industrial Relations, Division of Apprenticeship Standards. The unilateral single employer program committee offers the following apprenticeable occupation listed below.

The apprenticeable occupation within the program consists of the following related classroom instruction and hours of on-the-job training.

Production Technician	RSI 679 hours	OJT 4,000 hours
Biomedical Maintenance Technician	RSI 644 hours	OJT 6,000 hours

PROPOSED OCCUPATION(s) & WAGE RATES(s)

O*NET CODE

Production Technician	O*Net: 19-4021.00
Biomedical Maintenance Technician	O*Net: 49-9062.00

Production Technician Apprentice Starting Wage \$15.00 per hour

Production Technician Journeyworker Wage \$17.00 per hour

Biomedical Maintenance Technician Apprentice Starting Wage \$14.25 per hour

Biomedical Maintenance Technician Journeyworker Wage \$17.00 per hour

Program sponsors may pay at or above the minimum wage cited on the approved wage schedule, but never below the state minimum wage.

Apprenticeship Standards Incorporating and Adopting
U.S. Department of Labor, Office of Apprenticeship Approved Standards

NAME OF EMPLOYER (PROGRAM SPONSOR)

South Bay Workforce Investment Board (referred to as SBWIB)
11539 Hawthorne Blvd., Suite 500 Hawthorne 90250

OCCUPATIONS

Production Technician
Biomedical Maintenance Technician

TELEPHONE NO..

(310) 970-7724

COUNTY Los Angeles

O*Net: 19-4021.00

O*Net: 49-9062.00

See Attachment "A" -- Approved Standards by U.S. Department of Labor Office of
Apprenticeship that are herein incorporated adopted into these Standards

1. Purpose and Policy – Labor Code §3075.1; CCR §205 (e & g), §206, §212.2, §218
The parties hereto declare it their purpose and policy to incorporate the attached standards approved by U.S. Department of Labor Office of Apprenticeship to establish an organized, planned system of apprenticeship, conducted as an education-sponsored, employer-based undertaking. All provisions in the U.S. Department of Labor Office of Apprenticeship Standards attached hereto, that do not conflict with California law or create a higher standard than the California Apprenticeship laws and regulations shall be incorporated, adopted and agreed upon under the Shelley-Maloney Apprentice Labor Standards Act of 1939, as amended, to govern the employment and training of apprentices in the trade, craft or occupation defined herein, to become effective upon their approval under the California standards. In case of conflict of law, California Law shall prevail. No Section of these Standards of Apprenticeship shall be construed as permitting violation of any Federal Law or Regulations and the State of California Law or Regulations. When required by California Statute or Regulation, or by Section I – Program Administration of the attached U.S. Department of Labor Office of Apprenticeship Standards, there is hereby established the **WBWIB Master Committee** named master apprenticeship committee. The committee shall consist of at least three (3) members representing parties' signatory hereto, including employers who subscribe hereto participating in this program, an "Employer Subscription Agreement" (DAS-852) Attachment C. Committee members will be selected as outlined in the rules & regulations here to attached as Attachment D. In addition, there shall be advisors of the committee which shall consist of one apprenticeship consultant representing the Division of Apprenticeship Standards, one advisor from the Local Education Agency, and such other advisors as the committee shall determine. Such advisors and the apprenticeship consultant shall act without vote. These standards shall apply to the organizations signatory hereto, their members, to other employers who subscribe hereto participating in this program, an "Employer Subscription Agreement" (DAS-852) Attachment C, will be provided to specify the information particular to that employer as noted herein, including the option to waive or offer participation on the committee, employer committee members will be selected as outlined in the rules & regulations.

2. Craft, Trade, Occupation – Labor Code §3078 (c); CCR §212 (a,1)

The approved occupations are set forth in the U.S. Department of Labor Office of Apprenticeship

Standards attached to this California State standard. Additional occupations may be added or deleted by the above named sponsor by first submitting the proposed change(s) to the U.S. Department of Labor Office of Apprenticeship Standards. Once the U.S. Department of Labor Office of Apprenticeship Standards approves the change, the revised standards may be submitted to the California Division of Apprenticeship Standards (DAS) for approval of the Administrator of Apprenticeship.

3. Occupations

The occupational supplement(s) included in the attached U.S. Department of Labor Office of Apprenticeship Standards set forth the terms of the occupation, ratio, work processes, and related supplemental instruction for each individual occupation.

4. Responsibilities of Program Sponsor – CCR §212

The program sponsors are responsible for the administration and enforcement of all aspects of a Registered Apprenticeship program. Sponsor means any person, association, committee, or organization operating an apprenticeship program and in whose name the program is (or is to be) registered or approved. Sponsors will carry out the responsibilities and duties required of a Program Sponsor as described in Section I – Program Administration of the attached U.S. Department of Labor Office of Apprenticeship Standards.

In addition, the Sponsor(s) agree to:

- (1) administer and enforce the standards as approved;
- (2) establish rules and regulations governing the program and any apprenticeship committee if established;
- (3) The recruitment, selection, employment, and training of apprentices during their apprenticeship, shall be without discrimination because of race, color, religion, national origin or sex. The sponsor will take affirmative action to provide equal opportunity in apprenticeship for both minorities and women as required under Title 29 of the Code of Federal Regulations, Part 30, and by the California Plan for Equal Opportunity in Apprenticeship and by the California Code of Regulations, Title 8, Chapter 215;
- (4) provide training scheduled herein under competent trainers, including safety training through the program and first aid training, either in conjunction with the apprentices, related instruction classes or otherwise as appropriate;
- (5) arrange for Related and Supplemental Instruction pursuant to LC 3074;
- (6) have a Local Education Agency (L.E.A.) provide a letter approving the Related and Supplemental Instruction pursuant to LC 3074, 210212 (a, 7) (proof attached);
- (7) maintain a record of each apprentice's work training, related instruction and progress therein;
- (8) file a copy of each apprentice agreement with the Secretary of the California Apprenticeship Council;

- (9) provide training in the recognition of illegal discrimination and sexual harassment;
- (10) participate in the development of the training criteria;
- (11) submit an annual Self-Assessment Review and Program Improvement Plan annually to the Chief of DAS.

5. Responsibilities of Program Employer Subscriber's – CCR §212

- (1) administer and enforce the standards as approved;
- (2) The recruitment, selection, employment, and training of apprentices during their apprenticeship, shall be without discrimination because of race, color, religion, national origin or sex. The sponsor will take affirmative action to provide equal opportunity in apprenticeship for both minorities and women. The sponsor select apprentices on the basis of qualifications alone, through fair and impartial procedures applied uniformly to all applicants will operate the apprenticeship program as required under Title 29 of the Code of Federal Regulations, Part 30, and by the California Plan for Equal Opportunity in Apprenticeship and by the California Code of Regulations, Title 8, Chapter 2;
- (3) provide reasonably continuous employment to all apprentices in its employ;
- (4) provide the diversified work training scheduled herein under competent trainers, including safety training through the program and first aid training, either in conjunction with the apprentices, related instruction classes or otherwise as appropriate;
- (5) maintain a record of each apprentice's work training, related instruction and progress therein;
- (6) file a copy of each apprentice agreement with the Secretary of the California Apprenticeship Council;
- (7) grant apprentices credit for previous experience;
- (8) provide training in the recognition of illegal discrimination and sexual harassment;
- (9) participate in the development and comply with training criteria where such have been adopted;

6. Apprentice Agreements Labor Code – Labor Code § 3077, 3078; CCR § 206

Apprentices shall be at least 16 years of age. If the apprentice is under 18 years of age, the apprentice's parent or guardian must sign the agreement. When the period of training extends beyond 18, the apprentice agreement shall likewise be binding to such a period as may be covered. An apprentice is one who has been qualified and approved by the subscribing employer, signed an individual apprentice agreement with the program sponsor under these standards, which agreement has been approved by the Administrator or his duly authorized representative and filed with the California Apprenticeship Council. The standards shall be a part of the apprenticeship agreement. Apprentices shall be furnished a copy of the standards or given an opportunity to read them before indenture. The Administrator shall cancel apprentice agreements during the probationary period at the request in writing of either party; after the probationary period, agreements may be terminated by the Administrator by mutual consent of all the parties or cancelled for good and sufficient reason. An apprentice agreement shall remain in effect during a lay-off unless cancelled. [See Attachment "B" – California Apprenticeship Agreement (DAS-1)].

7. Hours and Working Conditions – CCR §208 (b) (c, 4, 6), §212

The regular workday, workweek and other working conditions for apprentices shall conform to all applicable California laws and regulations. The employers must pay the higher hourly wage of either the Federal minimum wage, State minimum wage or the Living wage enacted in the County or City where the employer is located. Overtime shall not interfere with or impair training or schooling nor be detrimental to the health and safety of the apprentice. Establish a mechanism to rotate apprentices from work processes to work processes to assure complete training.

8. Wages and Wage Progression – Labor Code §3078; CCR §208 (a) (c-1, 2, 5, 6), §212 (a 5)

The wages shall be a progressively increasing wage, employee benefits and other compensation as set by Section CCR §208. Hours of related instruction and required school time need not be compensated.

9. Responsibilities of Apprentices – CCR §205 (c, e, i, & m), § 212(3), 224- CCR 212 (3)

Each apprentice shall satisfactorily perform all work and learning assignments, and complete a course of related instruction, as determined in accordance with California Labor Code Section 3078(d). There shall be no liability on the part of the employer for an injury sustained by an apprentice engaged in schoolwork at a time when the employment of the apprentice has been temporarily or permanently terminated.

10. Disciplining of Apprentice – Labor Code §3071; CCR §212 (b, 8), §213, § 218

All controversies or differences concerning the apprentice agreement, which cannot be adjusted locally, shall be submitted to the Administrator of Apprenticeship for determination.

11. Certificate of Completion - Labor Code §3071, §3078, §3092; CCR §§ 212, 224

The California Apprenticeship Council will issue a Certificate of Completion to apprentices upon receipt of competent evidence of their satisfactory completion of apprenticeship hereunder.

12. Modification of Standards - Labor Code § 3073, 3078; CCR § 212 (b) (13)

These Standards shall be modified to conform to any changes in prevailing practices, conditions and wages in the area and the industry when such changes occur. Requests of the program sponsor for modification are subject to the approval of the Administrator of Apprenticeship.

13. Where the program sponsors establish rules and regulations for governing of the apprentices in the program, a copy of such shall be provided to each apprentice.

14. Where applicable if an employer has a collective bargaining agreement with a labor organization applicable to these occupation(s), approval by the labor organization will be affixed to the Employer Subscription Agreement (DAS-752).

15. The foregoing standards are hereby agreed to and adopted on: June 20, 2020

16. Sponsoring Organization Designee:

By /s/ Jan Vogel CEO

17. Sponsors designee authorized to administer the apprenticeship program:

Coordinator Chris Cagel, Regional Affairs Manager

STANDARDS OF APPRENTICESHIP DEVELOPED BY South Bay Workforce Investment Board, Inc.

FOR THE FOLLOWING OCCUPATION(S):

BIO-MANUFACTURING TECHNICIAN (aka Production Technician)

O*NET-SOC CODE: 19-4021.00 RAPIDS CODE: 1103CB

BIOMEDICAL EQUIPMENT TECHNICIAN (aka Biomedical Maintenance

Technician)O*NET-SOC CODE: 49-9062.00 RAPIDS CODE: 0888

APPROVED BY

/s/ Nora L. Carlton, State Director / California
U.S. DEPARTMENT OF LABOR / OFFICE OF APPRENTICESHIP
Sacramento, California

REGISTRATION DATE: 5/30/2020
RAPIDS REGISTRATION NUMBER: 2020-CA-78404

The legal requirements related to apprenticeship that apply to registered apprenticeship programs are contained in 29 U.S.C. 50 and 29 CFR §§ 29 and 30. Every effort has been made to ensure that the information in the apprenticeship standards is accurate and up-to-date.

FOREWORD

These South Bay Workforce Investment Board, Inc. (herein referred to as South Bay WIB) apprenticeship standards have as their objective the training of various apprenticeable occupations skilled in all phases of that industry. The sponsor recognizes that in order to accomplish this, there must be well-developed on-the-job learning combined with related instruction.

This recognition has resulted in the development of these standards of apprenticeship. They were developed in accordance with the basic standards recommended by the U.S. Department of Labor, Office of Apprenticeship, as a basis from which the sponsor can work to establish an apprenticeship training program that meets the particular needs of the area.

SECTION I – PROGRAM ADMINISTRATION

Program Sponsors are responsible for the administration of all aspects of a Registered Apprenticeship program. Sponsor means any person, association, committee, or organization operating an apprenticeship program and in whose name the program is (or is to be) registered or approved. The sponsor will not be establishing or using an Apprenticeship & Training Committee to manage or administer its program.

Responsibilities of the Sponsor

- A. Cooperate in the selection of apprentices as outlined in this program.
- B. Ensure that all apprentices are under written apprenticeship agreements.
- C. Review and recommend apprenticeship activities in accordance with this program.
- D. Establish the minimum standards of education and experience required of apprentices.
- E. Register the local apprenticeship standards with the Registration Agency.
- F. Hear and resolve all complaints of violations of apprenticeship agreements.
- G. Arrange evaluations of apprentices' progress in manipulative skills and technical knowledge.
- H. Maintain records of all apprentices, showing their education, experience, and progress in learning the occupation.
- I. Certify to the Registration Agency that apprentices have successfully completed their apprenticeship program.
- J. Notify, within 45 days, the Registration Agency of all new apprentices to be registered, credit granted, suspensions for any reason, reinstatements, extensions, completions and cancellations with explanation of causes
- K. Supervise all the provisions of the local standards and be responsible, in general, for the successful operation of the standards by performing the

duties here listed. Cooperate with public and private agencies, which can be of assistance in obtaining publicity to develop public support of apprenticeship. Keep in contact with all parties concerned, including apprentices, employers, and journeyworkers.

- L. Provide each apprentice with a copy of these standards, along with any applicable written rules and policies. Require the apprentice to sign an acknowledgment receipt of same. Follow this procedure whenever revisions or modifications are made to the rules and policies.
- M. When notified that an apprentice's related instruction or on-the-job progress is found to be unsatisfactory, the sponsor will determine whether the apprentice should continue in a probationary status and may require the apprentice to repeat a process or series of processes before advancing to the next wage classification. Should it be found in the course of this determination that the apprentice does not have the ability or desire to continue the training to become a journeyworker, the sponsor will, after the apprentice has been given adequate assistance and opportunity for corrective action, terminate the apprenticeship agreement, as provided in 29 CFR § 29. 7(h)(1)(2)(i) and (ii).
- N. The sponsor will provide each registered apprentice with continuous employment sufficient to provide the opportunity for completion of his or her apprenticeship program. If the sponsor is unable to fulfill its training and/or employment obligation in conformance with these standards, the sponsor will, per Section XXIII of these standards and with the apprentice's consent, make a good-faith effort to facilitate a transfer of the apprentice to another registered sponsor for completion of the apprenticeship.

If conditions of business make it necessary to temporarily suspend the period of apprenticeship. Apprentices suspended for this reason will be given the opportunity to resume their active apprenticeships before any additional apprentices are employed. The suspension and reinstatement of apprentices shall be done in relation to retention of the most advanced apprentice and in accordance with the company policy for breaks in seniority.

SECTION II - EQUAL OPPORTUNITY PLEDGE – 29 CFR §§ 29.5(b)(21)
and 30.3(c)(1)

The South Bay Workforce Investment Board, and its employer-partners, will not discriminate against apprenticeship applicants or apprentices based on race, color, religion, national origin, sex (including pregnancy and gender identity), sexual orientation, genetic information, or because they are an individual with a disability or a person 40 years old or older. The South Bay Workforce Investment Board, and its employer-partners, will take affirmative action to provide equal opportunity in apprenticeship and will operate the apprenticeship program as required under Title 29 of the Code of Federal Regulations, part 30.

SECTION III - AFFIRMATIVE ACTION PLAN AND SELECTION

PROCEDURES – 29 CFR §§ 29.5(b)(21), 30.4, and 30.10

The sponsor's procedures for selection of apprentices (Appendix D) must be included in the written plan for Standards of Apprenticeship submitted to and approved by the Registration Agency, as required under § 29.5. Within two years of program registration sponsors with five or more registered apprentices are required to adopt an affirmative action plan (Appendix C), which will become part of these standards of apprenticeship. However, the Office of Apprenticeship encourages the development of these two plans for all programs regardless of apprentice numbers. For programs with fewer than five apprentices, these plans are not required, and the sponsor may continue to select apprentices in conformance with its current human resources and equal employment opportunity hiring policies.

SECTION IV - QUALIFICATIONS FOR APPRENTICESHIP – 29 CFR § 29.5(b)(10)

Applicants will meet the following minimum qualifications. These qualification standards, and the score required on any standard for admission to the applicant pool, must be directly related to job performance, as shown by a statistical relationship between the score required for admission to the pool and performance in the apprenticeship program:

- A. Age
- A. Minimum qualifications required by the sponsor for persons entering the apprenticeship program, with an eligible starting age not less than 16 years.
- B. Education
- C. A high school diploma, General Educational Development (GED) equivalency or other high school equivalency credential is required. Applicants must provide an official transcript for high school and all GED records must be submitted, if applicable. Applicants affiliated with recognized pre-apprenticeship or school-to-apprenticeship programs recognized by this program must have completed at least the 10th grade of high school with a GPA of 2.0 or higher. For currently enrolled high school students applying to the apprenticeship program, the high school diploma or GED requirement is waived. Obtainment of a GED or high school diploma will be a requirement for completing the apprenticeship program.
- D. Physical
- E. Applicants will be physically capable of performing the essential functions of the apprenticeship program, with or without a reasonable accommodation, and without posing a direct threat to the health and safety of the individual or others.
- F. D. Others
Applicants must have transportation (e.g. – public and/or private) to the job

and related instruction as appropriate; and must possess such speaking, reading, and comprehension abilities as may be essential for reading and understanding written and oral instructions applicable to their occupation as defined in the job description.

SECTION V - APPRENTICESHIP AGREEMENT – 29 CFR §§ 29.3(d),

29.3(e), and 29.5(b)(11)

After an applicant for apprenticeship has been selected, but before employment as an apprentice or enrollment in related instruction, the apprentice will be covered by a written apprenticeship agreement (Appendix B) which will be submitted electronically through the Registered Apprenticeship Partners Information Data System (RAPIDS), using the Apprentice Electronic Registration process by the sponsor and approved by and registered with the Registration Agency. Such agreement will contain a statement making the terms and conditions of these standards a part of the agreement as though expressly written therein. The sponsor shall provide a copy of the apprenticeship agreement to the apprentice, the Registration Agency (maintain in Sponsors Apprentice file), and the employer. An additional copy will be provided to the veteran's state approving agency for those veteran apprentices desiring access to any benefits to which they are entitled.

Prior to signing the apprenticeship agreement, each selected applicant will be given an opportunity to read and review these standards, the sponsor's written rules and policies, and the apprenticeship agreement. The Registration Agency will be advised within 45 days of the execution of each apprenticeship agreement and will be given all the information required for registering the apprentice.

SECTION VI – SUPERVISION OF APPRENTICES AND RATIOS –29

CFR § 29.5(b)(14) and 29 CFR § 29.5(b)(7)

No apprentice shall work without proper or adequate supervision of the journeyworker.

For the purpose of these apprenticeship standards, adequate or proper supervision of the apprentice means the apprentice is under the supervision of a fully qualified journeyworker or supervisor at all times who is responsible for making work assignments, providing OJL, and ensuring safety at the worksite.

To adequately or properly supervise an apprentice does not mean the apprentice must be within eyesight or reach of the supervisor, but that the supervisor knows what the apprentice is working on; is readily available to the apprentice; and is making sure the apprentice has the necessary instruction and guidance to perform tasks safely, correctly, and efficiently.

The sponsor shall establish a numeric ratio of apprentices to fully proficient workers (journeyworkers) consistent with proper supervision, training, safety, and continuity of employment throughout the apprenticeship. The ratio language must be specific and clearly described as to its application to the jobsite, workforce, department, or plant. The ratio of apprentices to fully proficient workers (journeyworkers) will be as noted in Appendix A.

SECTION VII - TERM OF APPRENTICESHIP – 29 CFR § 29.5(b)(2)

The term of the occupation will be as specified on the Appendix A for each occupation included in these standards with the required OJL or competence attainment supplemented by the required hours of related instruction as stated on the Work Process Schedule and Related Instruction Outlines (Appendix A).

The sponsor may utilize a career lattice as a pathway for apprentices to move upward in the organization, which may or may not include an interim credential leading to the Certificate of Completion of Apprenticeship or career lattice credential, if applicable.

SECTION VIII - PROBATIONARY PERIOD – 29 CFR §§ 29.5(b)(8) and 29.5(b)(20)

Every applicant selected for apprenticeship will serve a probationary period. The probationary period shall not exceed 25 percent of the length of the program or 1 year, whichever is shorter. The probationary period will be stated for each occupation in Appendix A.

During the probationary period, either the apprentice or the sponsor may terminate the apprenticeship agreement, without stated cause, by notifying the other party in writing. The records for each probationary apprentice will be reviewed prior to the end of the probationary period. Records may consist of periodic reports regarding progression made in both the OJL and related instruction, and any disciplinary action taken during the probationary period.

Any probationary apprentice evaluated as satisfactory after a review of the probationary period will be given full credit for the probationary period and continue in the program.

After the probationary period, the apprenticeship agreement may be cancelled at the request of the apprentice or may be suspended or cancelled by the sponsor for reasonable cause after documented due notice to the apprentice and a reasonable opportunity for corrective action. In such cases, the sponsor will provide written notice to the apprentice and to the Registration Agency of the final action taken.

SECTION IX - HOURS OF WORK

Apprentices will generally work the same hours as fully proficient workers (journeyworkers), except that no apprentice will be allowed to work overtime if it interferes with attendance in related instruction classes. Apprentices who do not complete the required hours of OJL during a given segment will have the term of that segment extended until they have accrued the required number of hours of training.

SECTION X - APPRENTICE WAGE PROGRESSION – 29 CFR §

29.5(b)(5)

Apprentices will be paid a progressively increasing schedule of wages, along with any associated fringe benefits, during their apprenticeship based on the acquisition of increased skill and competence on the job and in related instruction. Before an apprentice is advanced to the next segment of training or to fully proficient or journeyworker status, the sponsor will evaluate all progress to determine whether advancement has been earned by satisfactory performance in OJL and in related instruction courses. In determining whether satisfactory progress has been made, the sponsor will be guided by the work experience and related instruction records and reports.

The progressive wage schedule will be an increasing percentage of the fully proficient or journeyworker wage rate. The percentages that will be applied to the applicable fully proficient or journeyworker rate are shown on the attached Work Process Schedule and Related Instruction Outline (Appendix A). In no case will the starting wages of apprentices be less than that required by any minimum wage law that may be applicable.

SECTION XI - CREDIT FOR PREVIOUS EXPERIENCE – 29 CFR §§

29.5(b)(12) and 30.3(a)(1)(ii)

The sponsor may grant credit toward the term of apprenticeship to new apprentices. Credit will be based on demonstration of previous skills or knowledge equivalent to those identified in these standards.

Apprentice applicants seeking credit for previous experience gained outside the supervision of the sponsor must submit the request at the time of application and furnish such records, affidavits, and other documents to substantiate the claim. An applicant who is a veteran and who wishes to receive consideration for military training and/or experience must submit a DD-214. Applicants requesting credit for previous experience who are selected into the apprenticeship program will start at the beginning wage rate.

The request for credit will be evaluated and a determination made by the sponsor during the probationary period, when actual on-the-job and related instruction performance can be examined. Prior to completion of the probationary period, the amount of credit to be awarded will be determined after review of the apprentice's previous work and training/education record and evaluation of the apprentice's performance and demonstrated skill and knowledge during the probationary period.

An apprentice granted credit will be advanced to the wage rate designated for the period to which such credit accrues. The Registration Agency will be advised of any credit granted and the wage rate to which the apprentice is advanced. The granting of advanced standing will be uniformly applied to all apprentices.

SECTION XII - WORK EXPERIENCE – 29 CFR § 29.5(b)(3)

During the apprenticeship, the apprentice will receive OJL and related instruction in all phases of the occupation necessary to develop the skill and proficiency of a skilled journeyworker. The OJL will be under the direction and guidance of the apprentice's supervisor.

SECTION XIII - RELATED INSTRUCTION – 29 CFR § 29.5(b)(4)

Every apprentice is required to participate in coursework related to the occupation as outlined in Appendix A. A minimum of 144 hours of related instruction is recommended for each year of the apprenticeship. Apprentices agree to take such courses as the sponsor deems advisable. The sponsor will secure the instructional aids and equipment it deems necessary to provide quality instruction. In cities, towns, or areas having no vocational schools or other schools that can furnish related instruction, the sponsor may require apprentices to complete the related instruction requirement through electronic media or other instruction approved by the Registration Agency.

The Sponsor, its employer-partners, will determine the best method of related instruction and the appropriate provider of that instruction.

Apprentices will not be paid for hours spent attending related instruction classes outside of normal work hours.

The sponsor will inform each apprentice of the availability of college credit, as applicable, for successful completion of this program.

Any apprentice who is absent from related instruction will satisfactorily complete all coursework missed before being advanced to the next period of training. In cases of failure of an apprentice to fulfill the obligations regarding related instruction without due cause, the sponsor will take appropriate disciplinary action and may terminate the

apprenticeship agreement after due notice to the apprentice and opportunity for corrective action.

To the extent possible, related instruction will be closely correlated with the practical experience and training received on the job. The sponsor will monitor and document the apprentice's progress in related instruction classes.

The sponsor will secure competent instructors whose knowledge, experience, and ability to teach will be carefully examined and monitored. The sponsor may require the instructors to attend instructor training to meet the requirements of 29 CFR § 29.5(b)(4)(i)(ii) or state regulations.

SECTION XIV - SAFETY, HEALTH AND ANTI-HARASSMENT TRAINING

– 29 CFR § 29.5(b)(9) and 30.3(4)(i)

All apprentices will receive instruction in safe and healthful work practices both on the job and in related instruction that are in compliance with the Occupational Safety and Health Administration standards promulgated by the Secretary of Labor under 29 U.S.C. 651 et seq., as amended, or state standards that have been found to be at least as effective as the federal standards.

All apprentices and individuals connected with the administration or operation of the apprenticeship program, including employers and journey workers who regularly work with apprentices will receive anti-harassment training, in order to provide for a culture of equality and fairness.

SECTION XV - MAINTENANCE OF RECORDS – 29 CFR §§ 29.5(b)(6),

29.5(b)(23), and 30.12(d)

Program sponsors are responsible for maintaining, at a minimum, the following records:

- summary of the qualifications of each applicant;
- basis for evaluation and for selection or rejection of each applicant;
- records pertaining to interview, if given;
- the original application;
- records of each apprentice's OJL;
- related instruction reviews and evaluations;
- progress evaluations;
- record of job assignments, promotions, demotions, layoffs, or terminations, rates of pay; and
- any other actions pertaining to the apprenticeship

Program sponsors will also maintain all records relating to apprenticeship applications (whether selected or not), including, but not limited to, the sponsor's outreach, recruitment, interview, and selection process. Such records will clearly identify minority and female (minority and nonminority) applicants and must include, among other things, the basis for evaluation and for selection or rejection of each applicant. For a complete list of records that each sponsor is required to maintain under 29 CFR § 30, please refer to 29 CFR § 30.12.

All such records are the property of the sponsor and will be maintained for a period of five years from the date of last action. They will be made available to the Registration Agency upon request.

SECTION XVI - CERTIFICATE OF COMPLETION OF APPRENTICESHIP **– 29 CFR § 29.5(b)(15), and Circular 2015-02**

Upon satisfactory completion of the requirements of the apprenticeship program as established in these Standards, the Sponsor will so certify to the Registration Agency and request the awarding of a Certificate of Completion of Apprenticeship to the completing apprentice(s). Such requests will be completed electronically using the Registered Apprenticeship Partners Information Data System (RAPIDS).

Certificate of Training (If applicable)

A Certificate of Training may be requested from and issued by the U.S. Department of Labor's Office of Apprenticeship, Office of the Administrator (the Registration Agency), only for a registered apprentice who has been certified by the sponsor as having successfully met the requirements to receive an interim credential as identified in these standards. The Registration Agency may require that a record of completed OJL and related instruction for the apprentice accompany such requests.

SECTION XVII - NOTICE TO REGISTRATION AGENCY – 29 CFR §§ **29.3(d), 29.3(e), and 29.5(b)(19)**

The Registration Agency must be notified within 45 days of any apprentice action - e.g., registered, reinstated, extended, modified, granted credit, completed, transferred, suspended, canceled - and a statement of the reasons therefor as provided for/requested in RAPIDS.

**SECTION XVIII - REGISTRATION, CANCELLATION, AND
DEREGISTRATION – 29 CFR §§ 29.5(b)(18), 29.8(a)(2), and 29.8(b)(8)**

These standards will, upon adoption by the sponsor, be submitted to the Registration Agency for approval. Such approval will be acquired before implementation of the program.

The sponsor reserves the right to discontinue at any time the apprenticeship program set forth herein. The sponsor will notify the Registration Agency within 45 days in writing of any decision to cancel the program.

The Registration Agency may initiate deregistration of these standards for failure of the sponsor to abide by the provisions herein. Such deregistration will be in accordance with the Registration Agency's regulations and procedures.

The sponsor will notify each apprentice of the cancellation of the program and the effect of same. If the apprenticeship program is cancelled at the sponsor's request, the sponsor will notify the apprentice(s) within 15 days of the date of the Registration Agency's acknowledgment of the sponsor's request. If the Registration Agency orders the deregistration of the apprenticeship program, the sponsor will notify the apprentice(s) within 15 days of the effective date of the order. This notification will conform to the requirements of 29 CFR § 29.8.

**SECTION XIX - AMENDMENTS AND MODIFICATIONS – 29 CFR §
29.5(b)(18)**

These standards may be amended or modified at any time by the sponsor provided that no amendment or modification adopted will alter any apprenticeship agreement in force at the time without the consent of all parties. Such amendment or modification will be submitted to the Registration Agency for approval and registration prior to being placed in effect. A copy of each amendment or modification adopted will be furnished to each apprentice to whom the amendment or modification applies.

**SECTION XX - ADJUSTING DIFFERENCES; COMPLAINT PROCEDURE
– 29 CFR §§ 29.5(b)(22), 29.7(k), and 30.14**

The sponsor will have full authority to enforce these standards. Its decision will be final and binding on the employer, the sponsor, and the apprentice, unless otherwise noted below.

If an applicant or an apprentice believes an issue exists that adversely affects his/her participation in the apprenticeship program or violates the provisions of the apprenticeship agreement or standards, the applicant or apprentice may seek relief through one or more of the following avenues, based on the nature of the issue:

29 CFR § 29.7(k)

The sponsor will hear and resolve all complaints of violations concerning the apprenticeship agreement and the registered apprenticeship standards for which written notification is received within 15 days of the alleged violations. The sponsor will make such rulings as it deems necessary in each individual case within 30 days of receiving the written notification. Either party to the apprenticeship agreement may consult with the Registration Agency for an interpretation of any provision of these standards over which differences occur. The name and address of the appropriate authority to receive, process, and dispose of complaints is:

Chris Cagle
Regional Affairs Manager
South Bay Workforce Investment Board
11539 Hawthorne Blvd., Suite 500
Hawthorne, CA 90250
(310) 970-7724
ccagle@sbwib.org

29 CFR § 30.14

Any individual who believes that he or she has been or is being discriminated against on the basis of race, color, religion, national origin, sex, sexual orientation, age (40 or older), genetic information, or disability with regard to apprenticeship, or who believes he or she has been retaliated against as described in § 30.17, may, personally or through an authorized representative, file a written complaint with the Registration Agency with whom the apprenticeship program is registered or directly with the EEOC, or State fair employment practices agency.

The complaint shall be in writing and shall be signed by the complainant. It must include the name, address, and telephone number of the person allegedly discriminated against, the identity of the respondent (the individual or entity that the complainant alleges is responsible for the discrimination), and a brief description of the circumstances of the failure to apply the equal opportunity standards provided in 29 CFR § 30.

The complaint must be filed not later than 300 days from the date of the alleged discrimination or specified failure to follow the equal opportunity standards. The time may be extended by the Registration Agency for good cause shown.

Complaints of discrimination and failure to follow equal opportunity standards in the apprenticeship program may be filed and processed under 29 CFR § 30 and the procedures set forth above.

The sponsor must provide written notice to all applicants for apprenticeship and all apprentices of their right to file a discrimination complaint and the procedures for doing so.

SECTION XXI - TRANSFER OF AN APPRENTICE AND TRAINING

OBLIGATION – 29 CFR § 29.5(13)

The transfer of an apprentice between apprenticeship programs and within an apprenticeship program must be based on agreement between the apprentice and the affected apprenticeship committees or program sponsors and must comply with the following requirements:

- i. The transferring apprentice must be provided a transcript of related instruction and OJL by the committee or program sponsor;
- ii. Transfer must be to the same occupation; and
- iii. A new apprenticeship agreement must be executed when the transfer occurs between the program sponsors.

The apprentice must receive credit from the new sponsor for the training already satisfactorily completed.

SECTION XXII - RESPONSIBILITIES OF THE APPRENTICE

Apprentices, having read these standards formulated by the sponsor, agree to all the terms and conditions contained herein and agree to abide by the sponsor's rules and policies, including any amendments, and to serve such time, perform such manual training, and study such subjects as the sponsor may deem necessary to become a skilled journeyworker.

In signing the apprenticeship agreement, apprentices assume the following responsibilities and obligations under the apprenticeship program:

- A. Maintain and make available such records of work experience and training received on the job and in related instruction as may be required by the sponsor.
- B. Develop and practice safe working habits and work in such a manner as to assure his/her personal safety and that of fellow workers.
- C. Work for the employer to whom the apprentice is assigned for the duration of the apprenticeship, unless the apprentice is reassigned to another employer or the apprenticeship agreement is terminated by the sponsor.

D. SECTION XXIII - TECHNICAL ASSISTANCE

Technical assistance, such as that from the U.S. Department of Labor's Office of Apprenticeship, and vocational schools, may be requested to advise the sponsor.

The sponsor is encouraged to invite representatives from industry, education, business, private organizations, and public agencies to provide consultation and advice for the successful operation of its training program.

SECTION XXIV - CONFORMANCE WITH FEDERAL LAWS AND REGULATIONS

No Section of these Standards of Apprenticeship shall be construed as permitting violation of any Federal Law or Regulation.

SECTION XXV - DEFINITIONS

APPRENTICE: Any individual employed by the employer meeting the qualifications described in the standards of apprenticeship who has signed an apprenticeship agreement with the local sponsor providing for training and related instruction under these standards and who registers with the Registration Agency.

APPRENTICE ELECTRONIC REGISTRATION (AER): An electronic tool that allows for instantaneous transmission of apprentice data for more efficient registration of apprentices and provides program sponsors with a faster turnaround on their submissions and access to their apprenticeship program data.

APPRENTICESHIP AGREEMENT: The written agreement between the apprentice and the sponsor setting forth the responsibilities and obligations of all parties to the apprenticeship agreement with respect to the apprentice's employment and training under these standards. Each apprenticeship agreement must be registered with the Registration Agency.

APPRENTICESHIP COMMITTEE (COMMITTEE): Those persons designated by the sponsor to act as agents for the sponsor in the administration of the program. A non-joint committee, which may also be known as a unilateral committee or (if it includes workers' representatives) a group non-joint committee, has employer representatives but does not have a bona fide collective bargaining agent as a participant.

CAREER LATTICE: Career lattice apprenticeship programs include occupational pathways that move an apprentice laterally or upward within an industry. These programs may or may not include an interim credential leading to the Certificate of Completion of Apprenticeship credential.

CERTIFICATE OF COMPLETION OF APPRENTICESHIP: The credential issued by the Registration Agency to those registered apprentices certified and documented as having successfully completed the apprentice training requirements outlined in these standards of apprenticeship.

CERTIFICATE OF TRAINING: A credential that may be issued by the U.S. Department of Labor's Office of Apprenticeship administrator to those registered apprentices whom the sponsor has certified in writing to the Registration Agency as having successfully met the requirements to receive an interim credential.

COMPETENCY-BASED OCCUPATION: An occupation using an apprenticeship approach that requires the attainment of manual, mechanical, or technical skills and knowledge, as specified by an occupation standard and demonstrated by an appropriate written and hands-on proficiency measurement.

ELECTRONIC MEDIA: Media that utilize electronics or electromechanical energy for the end user (audience) to access the content. Includes, but is not limited to, electronic storage media, transmission media, the Internet, extranets, lease lines, dial-up lines, private networks, and the physical movement of removable/transportable electronic media and/or interactive distance learning.

EMPLOYER: Any person or organization employing an apprentice, whether or not such person or organization is a party to an apprenticeship agreement with the apprentice. A person, business, or company signatory to this sponsor's standards that is responsible for providing hours of work, supervision, wages, and/or benefits to apprentices in its employ as registered under these standards.

HYBRID OCCUPATION: An occupation using an apprenticeship approach that measures the individual apprentice's skill acquisition through a combination of a specified minimum number of hours of on-the-job learning and the successful demonstration of competency as described in a work process schedule.

INTERIM CREDENTIAL: A credential issued by the Registration Agency, upon request of the appropriate sponsor, as certification of competency attainment by an apprentice.

JOB CORPS CENTER: Any of the federally funded Job Corps centers throughout the U.S. and Puerto Rico. Job Corps serves youths and young adults 16-24 years of age. Sponsors that wish to hire Job Corps graduates who are trained in any occupation covered under these standards and who meet the minimum qualifications for apprenticeship may do so via the direct entry provision described in Appendix D: Qualifications and Selection Procedures.

JOURNEYWORKER: A worker who has attained a level of skills, abilities, and competencies recognized within an industry as mastery of the skills and competencies required for the occupation. The term may also refer to a mentor, technician, specialist, or other skilled worker who has documented sufficient skills and knowledge of an occupation, either through formal apprenticeship or through practical on-the-job experience and formal training.

O*NET-SOC CODE: The Occupational Information Network (O*NET) codes and titles are based on the new Standard Occupational Classification (SOC) system mandated by the federal Office of Management and Budget for use in collecting statistical information on occupations. The O*NET classification uses an 8-digit O*NET-SOC code. Use of the SOC classification as a basis for the O*NET codes ensures that O*NET information can be readily linked to labor market information such as occupational employment and wage data at the national, state, and local levels.

ON-THE-JOB LEARNING (OJL): Tasks learned on-the-job in which the apprentice must become proficient before a completion certificate is awarded. The learning must be through structured, supervised work experience.

PROVISIONAL REGISTRATION: The 1-year initial provisional approval of newly registered programs that meet the required standards for program registration, after which program approval may be made permanent, continued as provisional, or rescinded following a review by the Registration Agency, as provided for in 29 CFR §§ 29.3(g) and (h).

REGISTERED APPRENTICESHIP PARTNERS INFORMATION DATA SYSTEM (RAPIDS): A federal system that provides for the automated collection, retention, updating, retrieval, and summarization of information related to apprentices and apprenticeship programs.

REGISTRATION AGENCY and FIELD REPRESENTATIVE: The U.S. Department of Labor's Office of Apprenticeship or a recognized State Apprenticeship Agency that has responsibility for registering apprenticeship programs and apprentices, providing technical assistance, conducting reviews for compliance with 29 CFR §§ 29 and 30, and conducting quality assurance assessments.

The field representative shall mean the person designated by Office of Apprenticeship to service this program. The Registration Agency and field representative identified are the U.S. Department of Labor, Office of Apprenticeship, Harry Dispensa, Apprenticeship Training Consultant, 90 7th Street, Suite 17-100, San Francisco, CA 94103, Tel: (415) 625-2230, E-Mail:Dispensa.Harry@dol.gov.

RELATED INSTRUCTION: An organized and systematic form of instruction designed to provide the apprentice with knowledge of the theoretical and technical subjects related to the apprentice's occupation. Such instruction may be given in a classroom, through occupational or industrial courses, or by correspondence courses of equivalent value, electronic media, or other forms of self-study approved by the Registration Agency.

SPONSOR: Any person, association, committee, or organization that operates an apprenticeship program and in whose name the program is registered. The sponsor in whose name the standards of apprenticeship will be registered, and which will have the full responsibility for administration and operation of the apprenticeship program. The sponsor means South Bay Workforce Investment Board, and it may delegate those responsibilities to other entities as it deems suitable.

STANDARDS OF APPRENTICESHIP: This entire document, including all appendices and attachments hereto, and any future modifications and additions approved by the Registration Agency.

SUPERVISOR OF APPRENTICE(S): An individual designated by the program sponsor to supervise or have charge and direction of an apprentice.

TIME-BASED OCCUPATION: An occupation using an apprenticeship approach that measures skill acquisition through the individual apprentice's completion of at least 2,000 hours of on-the-job learning as described in a work process schedule.

TRANSFER: A shift of apprenticeship registration from one program to another or from one employer within a program to another employer within that same program, where there is agreement between the apprentice and the affected apprenticeship committees or program sponsors.

YOUTHBUILD: A youth and community development program that addresses core issues facing low-income communities: housing, education, employment, crime prevention, and leadership development. In YouthBuild programs, low-income young

people ages 16-24 work toward their high school diploma or General Educational Development (GED) equivalency, learn job skills and serve their communities by building affordable housing, and transform their own lives and roles in society. Sponsors that wish to hire YouthBuild students who are trained in any occupation covered under these standards and who meet the minimum qualifications for apprenticeship may do so via the direct entry provision described in Appendix D: Selection Procedures.

SECTION XXVI - OFFICIAL ADOPTION OF APPRENTICESHIP

STANDARDS

South Bay Workforce Investment Board hereby adopts these standards of apprenticeship on this 13 day of March, 2020.

Sponsor(s) may designate the appropriate person(s) to sign the standards on their behalf.

Jan Vogel, CEO
South Bay Workforce Investment Board, Inc.
Program Sponsor

APPENDIX A1

WORK PROCESS SCHEDULE AND RELATED INSTRUCTION OUTLINE

DEVELOPED BY
SOUTH BAY WORKFORCE INVESTMENT BOARD
dba SOUTH BAY WIB

FOR THE OCCUPATION OF

PRODUCTION TECHNICIAN

(Existing Occupation Title: BIO-MANUFACTURING TECHNICIAN)
O*NET-SOC CODE: 19-4021.00 RAPIDS CODE: 1103CB

A Production Technician/Assistant adheres to standard operating procedures to safely mix, inspect, test, sort, sample, weigh or fill bio-medical goods. The occupation is responsible for complying with safety, work and documentation requirements, outlined by regulatory agencies and organizations. The Production Technician/Assistant may use, set up, maintain, calibrate, clean, and test laboratory and production equipment. This role communicates effectively in the workplace and can thrive in a team environment. Some roles may require higher educational requirements, based on needs for this position to mix chemicals or analyze test results.

1. TYPE OF OCCUPATION
 Time-based Competency-based Hybrid

2. TERM OF APPRENTICESHIP

The term of the occupation shall be defined by the attainment of all competencies of the position, which would be reasonably expected and approximated to occur within one to two years of OJL, supplemented by the minimum required 144 hours of related instruction each year, based on the specific employer's needs. The sponsor may recognize prior-learning achievements or demonstration of competencies to supplement related instruction or OJL hours.

3. RATIO OF APPRENTICES TO JOURNEYWORKERS

A numeric ratio of apprentices to journeyworkers will be established that is consistent with proper supervision, training, safety, and continuity of employment of the apprentice. The ratio language must be specific and clearly described as to its application to the job site. The apprentice to journeyworker ratio is: 1 apprentice(s) to 1 journeyworker, unless otherwise determined in the Employer Acceptance Agreement.

4. APPRENTICE WAGE SCHEDULE

Apprentice starting wages will be a minimum of \$15.00 per hour. Apprentices shall be paid a progressively increasing schedule of wages based on either a percentage or a dollar amount of the current minimum hourly journeyworker wage rate of \$17.00 per hour.

The Apprentices start at one rate and will be evaluated every year, at approximately 2000 hours of OJL, to determine competency level and appropriate pay increase as outline below.

Wage Schedule

Wage	Approx. Hours OJL	Learning Benchmark	Education Benchmark
\$15.00	0-2000	Apprenticeship entry wage	Begin Job-Related Education.
\$16.00	2000+	Progression with learning work process tasks.	Continued participation in Job-Related Education with Satisfactory Progress.
\$17.00	Exit wage	Exhibit mastery of all work process tasks and successful completes proficiency demonstration. Complete all required Job-Related Education coursework with satisfactory progress.	

5. WORK PROCESS SCHEDULE (See attached Work Process Schedule)

Work processes are developed to provide flexibility for employers to customize the framework to business needs. If optional Work Processes are needed, the work process hours should be reallocated from other work process to provide mastery of required competencies of the position. The employer may modify the work process schedule to meet local needs as stated in their Employer Acceptance Agreement.

6. RELATED INSTRUCTION OUTLINE (See attached Related Instruction Outline)

The employer may modify the related instruction outline to meet local needs as stated in their Employer Acceptance Agreement.

WORK PROCESS SCHEDULE

PRODUCTION TECHNICIAN

(Existing Occupation Title: BIO-MANUFACTURING TECHNICIAN)

O*NET-SOC CODE: 19-4021.00 RAPIDS CODE: 1103CB

The term of the apprenticeship shall be defined by the attainment of competencies, both technical and behavioral, of the assigned position, indicated in the technical assignment work process. Attainment of all competencies of the position would be reasonably expected and approximated to occur within one to two years of OJL. The following represents an average apprentice's work process schedule (WPS) over a 2-year period of the apprenticeship.

Technical Competencies and Work Processes

- 1) Environmental, Health & Safety
 - a) Inspect workplace for potential hazards before each shift or work.
 - b) Wear appropriate personal protective equipment, including clothing footwear, head protection, eye protection and gloves.
 - c) Adhere to the emergency procedures for spills, fire injuries and other incidents, including bloodborne pathogens.
 - d) Identify the location of first aid kits, emergency showers, eyewash stations, fire extinguishers and spill cleanup materials and how to use them.
 - e) Read and interpret the material safety data sheets for any hazardous products used and follow any recommended precautions.
 - f) Adhere to safety rules for an individual's facility.
 - g) Recognize, plan and organize layout and work for ergonomic problems.
 - h) Follow good housekeeping procedures.
 - i) Exercise established procedures for biohazard containment and waste disposal.
- 2) Regulatory Administration
 - a) Adhere to documentation and reporting requirements mandated by laws, regulations and accrediting standards, as well as guidelines of relevant governmental and non-governmental agencies.
 - b) Adhere to manufacturing schedule and timelines using tracking systems.
 - c) Complete production batch records in systems.
 - d) Document material and product transactions for traceability.
- 3) Production and Processing
 - a) Follow written instructions (SOPs) for production and process work.
 - b) Perform material verification and inspection of equipment prior to beginning work.
 - c) Uses laboratory equipment to measure, mix fill, and/or filler materials to finished good containers.

- d) Inspect finished goods and validate compliance.
 - e) Prepare and assemble packaging components, including sub-assemblies.
 - f) Fill and label final components.
 - g) Complete data entry in required systems to record production batch records.
 - h) Verify product delivery to shipping department or next production stage.
 - i) Use systems to close out work orders.
 - j) Troubleshoot process operations.
 - k) Clean lab area, clean rooms and safety cabinets.
 - l) Maintain production equipment and facilities in clean working condition.
 - m) Maintain inventory status on production components.
- 4) Quality Control and Assurance
- a) Use lab equipment to include, but not limited to autoclaves/sterilization products, balances and scales, bottle top dispensers, HPLC, UPLC, mass spectrometers, centrifuges, colorimeters/turbidity meters, conductivity meters and controllers, desiccators, dissolved oxygen meters, electrical meters, filtration equipment, environmental and weather monitoring equipment, flowmeters, fume hoods, general laboratory equipment and glassware, homogenizers, hotplates/stirrers, hydrometers, hygrometers and barometer, incubators, jar testing equipment, light and sound meters, microscopes, orbital shakers, pH/ORP/ISE meters/controllers, pipettors, polarimeters, refractometers, temperature control baths, thermometers, vacuum pumps, vortex mixers, and water analysis equipment.
 - b) Calibrate and label laboratory test equipment to meet requirements.
 - c) Perform and monitor quality control indicators recognizing factors that affect procedures and results, take appropriate action within predetermined limits when corrections are indicated, and notify the chain of command, when needed.
 - d) Apply principles of quality assurance and performing measurements to assure validity and accuracy of laboratory data generated.
 - e) Use data obtained from lab equipment to construct graphs and judge the accuracy and precision of results.
 - f) Follow continual preventative action process based on improvement opportunities or trends.
- 5) Applied Sciences, as assigned
- a) Apply principles of academic specialization areas to include chemistry, biology, physics and natural sciences to perform precise, quantitative techniques in mixing, measuring and analyzing products.
 - b) Demonstrate academic specialized problem-solving, analytical, and critical thinking skills.

The above work process is intended as a guide. It is not to be followed in any sequence, and it is understood that some adjustments may be necessary in the hours allotted for different work experience. In all cases, the apprentice is to receive enough experience to make him/her fully competent and use good workmanship in all work processes which are part of the trade.

Apprenticeship Competencies – Behavioral

In addition to mastering all the essential technical competencies outlined in the work processes, an apprentice must consistently demonstrate, at an acceptable level, the

following behavioral competencies to complete the apprenticeship. Additional behavioral competencies may be added or exchanged that are specific to the work site and will be identified in the employer acceptance agreement.

Item Behavioral Competencies Supervisor Initials Date Validated

- 1) Participates and focuses in team discussions/meetings
- 2) Seeks constant improvement in work processes and techniques
- 3) Focuses during independent work
- 4) Expresses openness to new ideas and change
- 5) Deals with ambiguity by exploring, asking questions, etc.
- 6) Knows when to ask for help
- 7) Demonstrates excellent written and oral communication skills
- 8) Demonstrates effective one-on-one communication skills
- 9) Maintains an acceptable attendance record
- 10) Reports to work on time
- 11) Organize, multitask and work in a fast-paced deadline driven work environment

- 12) Completes assigned tasks on time and independently
- 13) Uses appropriate language
- 14) Demonstrates respect for co-workers and supervisors
- 15) Demonstrates trust, honesty and integrity
- 16) Requests and performs work assignments without prompting
- 17) Troubleshoot and resolve problems
- 18) Work under pressure and time constraints with a high level of work quality
- 19) Cares appropriately for personal dress, grooming and hygiene
- 20) Maintains a positive attitude
- 21) Cooperates with and assists co-workers
- 22) Follows instructions/directions
- 23) Works under supervision
- 24) Accepts constructive feedback and criticism
- 25) Follows safety rules
- 26) Takes care of equipment and workplace
- 27) Keeps work area neat and clean
- 28) Meets supervisor's work standards
- 29) Prevents interference of personal life with work
- 30) Adheres to work policies/rules/regulations
- 31) Adapts effectively to change.
- 32) Learns and applies new procedures and techniques.

RELATED INSTRUCTION OUTLINE

PRODUCTION TECHNICIAN

(Existing Occupation Title: BIO-MANUFACTURING TECHNICIAN)

O*NET-SOC CODE: 19-4021.00 RAPIDS CODE: 1103CB

The related instruction has been developed in cooperation with Bio-Flex industry partners, under sponsorship from the South Bay Workforce Investment Board (SBWIB) as part of the Production Technician/Assistant registered apprenticeship. The following is a set of courses aligned to the standards outlined by the apprenticeship work processes. Instruction will be delivered by education partners selected by employers; however, employers, under support from the sponsor, should align their apprentice training plans to the topics identified in the following Related Training Instruction (RTI) schedule.

Related Training Instruction (RTI) - This instruction shall include, but not be limited to, at least 144 hours per year for each year of the apprenticeship. The related theoretical education is tightly integrated with real work product. The curriculum is defined as a variety of courses and course topics, around which the exams and projects are based. By defining the RTI in this way, all competencies required of the students are met, through project work.

Bio-Flex allow employers the opportunity to accept prior learning credit for academic equivalencies for RTI education requirements. An agreement between the employer and the registered apprenticeship sponsor will be required for prior learning credit acceptance.

Year One

The Year One RTI schedule should apply to all Apprentices.

Course Subjects Approximate Hours

- 1) General Safety Training: This course fosters a safer work environment and reduces the likelihood of injuries, property damage, hazardous materials releases, etc. Documented safety training in the following subject areas may be required through regulatory agencies. The following list includes a minimum list of safety topics, but employers may require additional training, per regulation.
 - a) Injury & Illness Prevention Program
 - b) Fume hoods
 - c) Chemical Hygiene Plan
 - d) Regulated Carcinogens
 - e) Personal Protective Equipment
 - f) Bloodborne Pathogens
 - g) Aerosol Transmittable Diseases
 - h) Emergency Action Plan

- i) Fire Extinguishers
 - j) Material Safety Data Sheets
 - k) Hazardous Waste Operations. & Emergency. Response
 - l) Heat Stress
 - m) Laser Equipment
 - n) Control of Hazardous Energy
 - o) Respiratory Protection
 - p) Permissible Exposure Limits
 - q) Confined Spaces
- 2) • Workplace Ergonomics 30 hours
- 3) Laboratory Safety Fundamentals Training: This course provides an overview of laboratory safety requirements and is required by all laboratory personnel. Documented safety training in the following subject areas may be required through regulatory agencies. The following list includes a minimum list of safety topics, but employers may require additional training, per regulation.
- a) Laboratory Emergency Procedures
 - b) Engineering Controls (i.e., chemical fume hoods, biological safety cabinets, chemical storage locations, etc.)
 - c) Administrative Controls (i.e., laboratory safety manual, SDS sheets, SOPs, chemical and hazard identification, etc.)
 - d) Personal Protective Equipment (i.e., lab coat, eye protection, gloves, etc.)
 - e) Waste Disposal (location, proper labeling, proper storage requirements, proper shipping process)
 - f) Other Safety Laboratory-Specific Procedures (i.e., UV light, laser, safe use of specialized equipment, high voltage equipment, confined space, etc.) 30 hours
- 4) Bio-Medical Terminology: This course focuses on the component parts of bio-medical terms: prefixes, suffixes and word roots. Apprentices practice formation, analysis and reconstruction of terms. Emphasis should be placed on spelling, definition and pronunciation. 30 hours
- 5) Bio-Medical Mathematics: This course focuses on performing the mathematical calculations routinely used in laboratory settings. 14 hours
- 6) Basic Lab Skills: This course covers the fundamental principles and procedures performed in the laboratory. Apprentices will apply bio-medical terminology and use basic laboratory equipment, following safety precautions. Topics include: general laboratory skills, guidelines, government regulations, safety, quality assurance/control and professional standards and conduct. 40 hours
- TOTAL HOURS 144 hours

Year Two

The Year Two RTI schedule may be flexed from the provided list to meet individual employer needs, specific to their business needs. Requirements are based on a minimum of 144 hours in the second year.

Course Subjects Approximate Hours

- 1) Refresher Safety Training: This course meets any annual safety refresher requirements at a facility. 10 hours

- 2) **Written Communications:** This course teaches the writing process which includes prewriting, drafting and revising. Through writing assignments, students analyze audience and purpose, research and organize ideas, and format and design documents based on subject matter and content. 15 hours
- 3) **Oral and Interpersonal Communication:** This course focuses on developing various communication skills including speaking and listening. Apprentices should practice intrapersonal/interpersonal and nonverbal communication skills through oral presentations, group activities and written projects. 15 hours
- 4) **Introduction to Ethics:** This course provides a basic understanding of ethical theories and uses diverse ethical perspectives to analyze and compare relevant issues. Apprentices should critically evaluate individual, social and/or professional standards of behavior and apply a systematic decision-making process to these situations. 15 hours
- 5) **Advanced Lab Skills:** This course covers the continued or advanced principles and procedures performed in the laboratory. Apprentices continue development in additional or advanced laboratory equipment, following safety precautions. Topics include: general laboratory skills, guidelines, government regulations, safety, quality assurance/control and professional standards and conduct. 60 hours
- 6) **General Anatomy & Physiology:** This course examines basic concepts of human anatomy and physiology as they relate to health sciences. Using a body systems approach, the course emphasizes the interrelationships between structure and function at the gross and microscopic levels of organization of the entire human body. 30 hours
- 7) **Molecular Diagnostics:** This course introduces the principles and application of molecular diagnostics in the clinical laboratory. 60 hours
- 8) **Fundamentals of Chemistry:** This course introduces concepts including dimensional analysis, mole concept, atomic and molecular structure, nomenclature, chemical reactions, thermochemistry, intermolecular interactions, gases, mixtures, kinetics, equilibrium and acid base chemistry. 60 hours
 - i) **Introduction to Biochemistry:** This course provides the skills and knowledge for organic and biological chemistry. Emphasis is on recognizing the structure, physical properties and chemical reactions of organic molecules, body fluids, and acids. Additional emphasis is placed on biological functions and their relationships to enzymes, proteins, lipids, carbohydrates and DNA. 60 hours
- 9) **Microbiology:** This course examines microbial structure, metabolism, genetics, growth, and the relationship between humans and microorganisms. The content addresses disease production, epidemiology, host defense mechanisms and the medical impact of microbes. Apprentices will examine the role of microbes in the environment, industry and biotechnology. 60 hours
- 10) **Clinical Chemistry:** This course introduces clinical chemistry techniques and procedures for routine analysis using photometric, potentiometric and separation techniques. Topics in this course include pathophysiology and methodologies for carbohydrate, lipids, proteins, renal function and blood gas analysis. 60 hours
- 11) **Clinical Microbiology:** This course presents the clinical importance of infectious diseases with emphasis upon the appropriate collection, handling and identification

of clinically relevant bacteria. Disease states, modes transmission and methods of prevention and control, including antibiotic susceptibility testing, will also be discussed. 60 hours

12)Advanced Microbiology: This course provides an overview of acid-fast organisms, fungi, parasites, and anaerobic bacteria. The organisms, their pathophysiology, epidemiology, the diseases and conditions that they cause, laboratory methods of handling, culturing and identification will be discussed. 60 hours

TOTAL HOURS 565 hours

APPENDIX A2

WORK PROCESS SCHEDULE

AND

RELATED INSTRUCTION OUTLINE

DEVELOPED BY

SOUTH BAY WORKFORCE INVESTMENT BOARD

dba SOUTH BAY WIB

FOR THE OCCUPATION OF

BIOMEDICAL MAINTENANCE TECHNICIAN

(EXISTING TITLE: BIOMEDICAL EQUIPMENT TECHNICIAN)

O*NET-SOC CODE: 49-9062.00 RAPIDS CODE: 0888

WORK PROCESS SCHEDULE
BIOMEDICAL MAINTENANCE TECHNICIAN
(EXISTING TITLE: BIOMEDICAL EQUIPMENT TECHNICIAN)
O*NET-SOC CODE: 49-9062.00 RAPIDS CODE: 0888

This schedule is attached to and a part of these Standards for the above identified occupation.

1. TYPE OF OCCUPATION
 Time-based Competency-based Hybrid

2. TERM OF APPRENTICESHIP

The term of the occupation shall be defined by the attainment of all competencies of the position, which would be completed within 6000 hours of OJL, supplemented by the minimum required 144 hours of related instruction each year, based on the specific employer's needs. The sponsor may recognize prior-learning achievements or demonstration of competencies to supplement related instruction or OJL hours.

3. RATIO OF APPRENTICES TO JOURNEYWORKERS

A numeric ratio of apprentices to journeyworkers consistent with proper supervision, training, safety, and continuity of employment will be defined in the Employer Acceptance Agreement. The ratio language must be specific and clearly described as to its application to the job site. The apprentice to journeyworker ratio is: 1 apprentice(s) to 1 journeyworker, unless otherwise determined.

4. APPRENTICE WAGE SCHEDULE

Apprentice starting wages will be a minimum of \$14.25 per hour. Apprentices shall be paid a progressively increasing schedule of wages based on either a percentage or a dollar amount of the current minimum hourly journey worker wage rate of \$17.00 per hour.

The Apprentices start at one rate and are evaluated at every year, or 2000 hours of OJL to determine competency level and appropriate pay increase as outline below.

Wage Schedule

Starting Wage	Approx. Hours	OTJ Learning Benchmark	Education Benchmark
\$14.25	0-2000	Apprenticeship entry wage.	Begin Job-Related Education.
\$15.00	2000-4000	Progression with learning work process tasks.	Continued participation in Job-Related Education with Satisfactory Progress.
\$16.00	4000-6000	Progression with learning work process tasks.	Continued participation in Job-Related Education with Satisfactory Progress.
\$17.00	Exit wage	Exhibit mastery of all work process tasks and successful completes proficiency demonstration.	Complete all required Job-Related Education coursework with satisfactory progress.

5. WORK PROCESS SCHEDULE (See attached Work Process Schedule)

Work processes were developed to provide to flexibility for employers to customize the framework to business needs. If optional Work Processes are needed, the work process hours should be reallocated from other work process to provide mastery of required Work Processes. The sponsor may modify the related instruction to meet local

needs prior to submitting these Standards to the appropriate Registration Agency for approval.

6. RELATED INSTRUCTION OUTLINE (See attached Related Instruction Outline)
The sponsor may modify the related instruction to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

WORK PROCESS SCHEDULE
 BIOMEDICAL MAINTENANCE TECHNICIAN
 (EXISTING TITLE: BIOMEDICAL EQUIPMENT TECHNICIAN)
 O*NET-SOC CODE: 49-9062.00 RAPIDS CODE: 0888

A Maintenance Technician is responsible for complying with safety, work and documentation requirements, outlined by regulatory agencies and organizations to test, adjust, or repair biomedical or electro-medical equipment. The Maintenance Technician will inspect and test malfunctioning medical or related equipment, following manufacturers' specifications and using test and analysis instruments. They will test or calibrate components or equipment, following manufacturers' manuals and troubleshooting techniques, using hand tools, power tools, or measuring devices.

They will keep records of maintenance, repair, and required updates of equipment. The Maintenance Technician will perform preventive maintenance or service, such as cleaning, lubricating, or adjusting equipment. This role communicates effectively in the workplace and can thrive in a team environment.

The term of the apprenticeship shall be defined by the attainment of competencies, both technical and behavioral, of the assigned position, indicated in the technical assignment work process. The following represents an average apprentice's work process schedule (WPS) over the 3-year period of the apprenticeship.

Technical Competencies and Work Processes	Year 1	Year 2	Year 3	Total
A. Environmental, Health and Safety	200	100	100	400
B. Craft Accountabilities	200	100	100	400
C. Mechanical Equipment	600	600	800	2000
D. Electronic Control Systems	800	900	500	2200
E. Specialized Biomedical Equipment, as assigned	200	300	500	1000
Totals	2000	2000	2000	6000

The following depicts the details of each of these technical competencies:

Technical Competencies and Work Processes	Year 1	Year 2	Year 3	Total
1. Environmental, Health & Safety				
1. Inspect workplace for potential hazards before each shift or work.				
2. Wear appropriate personal protective equipment, including clothing footwear, head protection, eye protection and gloves.				
3. Adhere to the emergency procedures for spills, fire injuries and other incidents, including bloodborne pathogens.				
4. Identify the location of first aid kits, emergency showers, eyewash stations, fire extinguishers and spill cleanup materials and how to use them.				
5. Read and interpret the material safety data sheets for any hazardous products used and follow any recommended precautions.				

6. Maintain a clean and orderly workplace, storing hazardous materials properly and disposing of waste products according to company policies and local/federal laws and regulations.
7. Use, store and maintain hand-tools properly to eliminate trip hazards, injury, electrocution or damage.
8. Lift supplies and materials using proper body mechanics and assistive devices, such as hoists, lifts, forklifts and straps.
9. Adhere to safety rules for an individual's facility.
10. Ensure confined space procedures are followed according to site specifications and jurisdictional regulations.
11. Recognize, plan and organize layout and work for ergonomic problems.
12. Work around energy sources by observing limits and procedures for approaching energy sources to ensure personal safety and protection of equipment in accordance with standards.
13. Perform and verify Lock-Out/Tag-Out (LOTO) is confirmed by performing a post-operational test to determine zero energy state.

200 100 100 400

2. Craft Accountabilities

1. Adhere to documentation and reporting requirements mandated by laws, regulations and accrediting standards, as well as guidelines of relevant governmental and non-governmental agencies.
2. Adhere to maintenance schedule, timelines and documentation using tracking systems.
3. Communicate effectively in a professional manner when investigating equipment breakdowns, participating in team meetings and working with co-workers.
4. Pay attention to processes or steps leading to the accomplishment of results, looking for ways to improve quality, efficiency and/or effectiveness.
5. Show insight into the root-causes of problems, generating a range of solutions and courses of action with benefits, costs, and risks associated with each.
6. Apply expertise in work to help identify equipment failure cause-effect relationship and convey them to the team.
7. Follow written instructions (SOPs) for maintenance work.
8. Read and interpret mechanical and assembly/disassembly prints, fluid power diagrams, and electrical schematics.
9. Solve craft calculations to include measurement, conversions and calculations using tools, calculations, and chart/tables.
10. Select and use tools and equipment to install or remove fastening and retaining devices.
11. Select and use measurement tools and devices to validate work meet specifications.
12. Connect computers and peripheral devices through input/output (I/O) ports for troubleshooting purposes.

13. Configure and update software needed to troubleshoot equipment.
200 100 100 400

3. Mechanical Equipment

1. Identify all pinch points on primary and supportive machine tools and the proper placements of guards as part of a pre-operational check of the equipment in compliance with company standards.
2. Assemble and adjust conveyor systems (rollers and belts, guides and rollers, guards).
3. Troubleshoot, repair and replace mechanical components (bearings, bushings, v-belts, timing belts, roller chains, sheaves, sprockets, shafts, keys, hubs, couplings, clutches, brakes, gears and gear assemblies, gaskets, seals linear bearings, and ball screws).
4. Troubleshoot, repair and replace pneumatic and hydraulic system components (regulators, filters, lubricators, dryers, check valves, flow control valves, relief valve, dump valves, manual switches and operators, directional control valves, cylinders, motors).
5. Troubleshoot, repair and replace vacuum system components (pumps, generators, switches, cups).
6. Perform lubrication duties to equipment accordance with standard work (safety practices, grease and oil specifications, disposal and recycling, automatic lubrications systems).
7. Troubleshoot, repair and replace motor control devices.
8. Troubleshoot, repair, and replace AC/DC motors.
9. Troubleshoot, repair, and replace electronic sensors and components (photoelectric sensors, proximity sensors, DC power supplies, electronic motor drives).

600 600 800 2000

4. Electronic Control Systems

1. Assemble and install wiring and components according to NEC requirements, drawings, and specifications.
2. Install and connect basic components of a Programmable Logic Control (PLC) including racks, power supply, processor, and single point digital input/output modules.
3. Identify failures of the PLC hardware using indicator lights, remove and replace faulty components, and return the system to operation.
4. Troubleshoot a machine or process by observing PLC indicator lights and reviewing the PLC software ladder diagram (relays, timers and counters).
5. Troubleshoot a PLC or a PLC controlled machine or process by observing input and output conditions and monitoring the program in real time.
6. Troubleshoot a machine or process utilizing a one to one PLC/Human Machine Interface (HMI) arrangement.
7. Troubleshoot a machine or process utilizing one to many, many to one, and many to many configurations of PLC and HMI.

8. Install and troubleshoot basic components of an Instrumentation and Process Control Systems including sensors, transmitters, final elements, PID controllers.
9. Install and troubleshoot basic components of a Motion Control system and network.
10. Install and troubleshoot basic components of a Motion Control system and network.
11. Program robot movement with a teach pendant.
12. Connect and calibrate a robot to a conveyor system and a vision system.
13. Teach a vision system how to identify and orient good and bad product.
14. Troubleshoot a robot system, replace components and return to operation.

800 900 500 2200

5. Specialized Biomedical Equipment, as assigned

1. Evaluate and determine that all biomedical equipment is in proper working condition, ensuring a safe, reliable health care environment.
2. Demonstrate solid understanding of specialized biomedical equipment used by technicians in the company.

200 300 500 1000

Totals 2000 2000 2000 6000

The above work process is intended as a guide. It is not to be followed in any sequence, and it is understood that some adjustments may be necessary in the hours allotted for different work experience. In all cases, the apprentice is to receive enough experience to make him/her fully competent and use good workmanship in all work processes which are part of the trade. In addition, the apprentice shall be fully instructed in safety and OSHA requirements.

Apprenticeship Competencies – Behavioral

In addition to mastering all the essential technical competencies outlined in the work processes, an apprentice must consistently demonstrate, at an acceptable level, the following behavioral competencies to complete the apprenticeship. Additional behavioral competencies may be added or exchanged that are specific to the work site and will be identified in the employer acceptance agreement.

Item Behavioral Competencies

- 1 Participates and focuses in team discussions/meetings
- 2 Seeks constant improvement in work processes and techniques
- 3 Focuses during independent work
- 4 Expresses openness to new ideas and change
- 5 Deals with ambiguity by exploring, asking questions, etc.
- 6 Knows when to ask for help
- 7 Demonstrates excellent written and oral communication skills
- 8 Demonstrates effective one-on-one communication skills

- 9 Maintains an acceptable attendance record
- 10 Reports to work on time
- 11 Organize, multitask and work in a fast-paced deadline driven work environment
- 12 Completes assigned tasks on time and independently
- 13 Uses appropriate language
- 14 Demonstrates respect for co-workers and supervisors
- 15 Demonstrates trust, honesty and integrity
- 16 Requests and performs work assignments without prompting
- 17 Troubleshoot and resolve problems
- 18 Work under pressure and time constraints with a high level of work quality

- 19 Cares appropriately for personal dress, grooming and hygiene
- 20 Maintains a positive attitude
- 21 Cooperates with and assists co-workers
- 22 Follows instructions/directions
- 23 Works under supervision
- 24 Accepts constructive feedback and criticism
- 25 Follows safety rules
- 26 Takes care of equipment and workplace
- 27 Keeps work area neat and clean
- 28 Meets supervisor's work standards
- 29 Prevents interference of personal life with work
- 30 Adheres to work policies/rules/regulations
- 31 Adapts effectively to change.
- 32 Learns and applies new procedures and techniques.

RELATED INSTRUCTION OUTLINE
BIOMEDICAL MAINTENANCE TECHNICIAN
(EXISTING TITLE: BIOMEDICAL EQUIPMENT TECHNICIAN)
O*NET-SOC CODE: 49-9062.00 RAPIDS CODE: 0888

The related instruction has been developed in cooperation with Bio-Flex industry partners, under sponsorship from the South Bay Workforce Investment Board (SBWIB) as part of the Maintenance Technician registered apprenticeship. The following is a set of courses aligned to the standards outlined by the apprenticeship work processes. Instruction will be delivered by education partners selected by employers; however, employers, under support from the sponsor, should align their apprentice training plans to the topics identified in the following Related Training Instruction (RTI) schedule. Related Training Instruction (RTI) - This instruction shall include, but not be limited to, at least 144 hours per year for each year of the apprenticeship. The related theoretical education is tightly integrated with real work product. The curriculum is defined as a variety of courses and course topics, around which the exams and projects are based. By defining the RTI in this way, all competencies required of the students are met, through project work.

Bio-Flex allow employers the opportunity to accept prior learning credit for academic equivalencies for RTI education requirements. An agreement between the employer and the registered apprenticeship sponsor will be required for prior learning credit acceptance.

Year One

The Year One RTI schedule should apply to all Apprentices.

#	Course Subjects	Approximate Hours
1	General Safety Training: This course fosters a safer work environment and reduces the likelihood of injuries, property damage, hazardous materials releases, etc. Documented safety training in the following subject areas may be required through regulatory agencies. The following list includes a minimum list of safety topics, but employers may require additional training, per regulation.	
	a. Injury & Illness Prevention Program	
	b. Fume hoods	
	c. Chemical Hygiene Plan	
	d. Regulated Carcinogens	
	e. Personal Protective Equipment	
	f. Bloodborne Pathogens	
	g. Aerosol Transmittable Diseases	
	h. Emergency Action Plan	
	i. Fire Extinguishers	
	j. Material Safety Data Sheets	
	k. Hazardous. Waste Operations. & Emergency. Response	
	l. Heat Stress	

- m. Laser Equipment
 - n. Control of Hazardous Energy
 - o. Respiratory Protection
 - p. Permissible Exposure Limits
 - q. Confined Spaces
 - r. Workplace Ergonomics
 - s. Lock-Out/Tag-Out (LOTO)
 - t. Rigging and Lifting 30 hours
- 2 Laboratory Safety Fundamentals Training: This course provides an overview of laboratory safety requirements and is required by all laboratory personnel. Documented safety training in the following subject areas may be required through regulatory agencies. The following list includes a minimum list of safety topics, but employers may require additional training, per regulation.
- a. Laboratory Emergency Procedures
 - b. Engineering Controls (i.e., chemical fume hoods, biological safety cabinets, chemical storage locations, etc.)
 - c. Administrative Controls (i.e., laboratory safety manual, SDS sheets, SOPs, chemical and hazard identification, etc.)
 - d. Personal Protective Equipment (i.e., lab coat, eye protection, gloves, etc.)
 - e. Waste Disposal (location, proper labeling, proper storage requirements, proper shipping process)
 - f. Other Safety Laboratory-Specific Procedures (i.e., UV light, laser, safe use of specialized equipment, high voltage equipment, confined space, etc.)
30 hours
- 3 Oral and Interpersonal Communication: This course focuses on developing various communication skills including speaking and listening. Apprentices should practice intrapersonal/interpersonal and nonverbal communication skills through oral presentations, group activities and written projects. 15 hours
- 4 Bio-Medical Mathematics: This course is designed to cover concepts in algebra, function analysis, and trigonometry. Topics include exponential and logarithmic functions, transformations of functions, Law of Sines, Law of Cosines, vectors, and statistics. Upon completion, students should be able to demonstrate the ability to use mathematics and technology for problem-solving, analyzing and communicating results. 14 hours
- 5 DC Circuits: This course focuses on the study of the fundamentals of direct current, including Ohm's law, Kirchhoff's laws and circuit analysis techniques. Emphasis is on circuit analysis of resistor networks and DC measurements. 45 hours
- 6 AC Circuits: This course focuses on the study of the fundamentals of alternating current, including series and parallel AC circuits, phasors, capacitive and inductive networks, transformers, and resonance. 45 hours

- 7 Solid State Devices: This course focuses on the study of the fundamentals of alternating current, including series and parallel AC circuits, phasors, capacitive and inductive networks, transformers, and resonance. 45 hours
- TOTAL HOURS 224 hours

Year Two

The Year Two RTI schedule may be flexed from the provided list to meet individual employer needs, specific to their business needs. Requirements are based on a minimum of 144 hours in the second year.

#	Course Subjects	Approximate Hours
1	Refresher Safety Training: This course focuses on the study of codes, standards and management principles related to biomedical instrumentation, with emphasis on the proper use and application of safety test equipment, preventive maintenance procedures, and documentation of work performed.	20 hours
2	Personal Computer Hardware: This course focuses on the study of personal computer hardware, including personal computer assembly and upgrading, setup and configuration, and troubleshooting.	60 hours
3	Networking Technologies: This course focuses on the identification of basic principles of medical equipment networking, including hardware, software and connectivity issues of medical equipment in healthcare facilities.	60 hours
4	Medical Circuits Troubleshooting: This course focuses on developing skills in troubleshooting of medical electronic circuits, and utilization of appropriate test and calibration equipment.	60 hours
5	Medical Electronic Applications: This course introduces sensors, transducers, and supporting circuits used in medical instrumentation devices. The course will allow students to progressively understand basic principles and integration of sensors and transducers used in/with medical equipment.	80 hours
6	Biomedical Equipment Maintenance: This course covers the theory and principles of operation of a variety of basic electro-mechanical equipment, with emphasis on repair and service of actual medical equipment. This course includes hands-on installation and repair of mechanical and electrical components.	60 hours
7	Applied Biomedical Equipment Technology: This course introduces biomedical instrumentation as related to anatomy and physiology of the human body. It includes medical devices used for monitoring, diagnosis, and treatment of the human body systems.	60 hours
	TOTAL HOURS	400 hours

Year Three

The Year Three RTI schedule may be flexed from the provided list to meet individual employer needs, specific to their business needs. Requirements are based on a minimum of 144 hours in the third year.

#	Course Subjects	Approximate Hours
1	1 Refresher Safety Training: This course focuses on the study of codes, standards and management principles related to biomedical instrumentation, with emphasis on the proper use and application of safety test equipment, preventive maintenance procedures, and documentation of work performed.	20 hours
2	2 Biomedical Instrumentation: This course covers theory of operation, circuit analysis, troubleshooting techniques, and medical applications for a variety of instruments and devices. Topics include electrodes, transducers, instrumentation amplifiers, electrocardiographs, monitors, recorders, defibrillators, ESU units, and related equipment used in clinical laboratories, intensive care units, and research facilities. Upon completion, students should be able to calibrate, troubleshoot, repair, and certify that instrumentation meets manufacturer's original specifications.	60 hours
3	3 Physiological Instruments: This course emphasizes the theory of circuit analysis, troubleshooting and the operation of graphics-display recording devices, defibrillators and multi-purpose diagnostic equipment.	60 hours
4	4 Software for Technicians: This course introduces computer software which can be used to solve electrical/electronic problems. Topics include electrical/electronic calculations and applications. Upon completion, students should be able to utilize a personal computer for electrical/electronic-related applications.	30 hours
5	5 Troubleshooting: This course introduces the principles of troubleshooting and logical diagnosis by using critical thinking skills to define, analyze, and implement a solution.	30 hours
6	6 Introduction to Ethics: This course provides a basic understanding of ethical theories and uses diverse ethical perspectives to analyze and compare relevant issues. Apprentices should critically evaluate individual, social and/or professional standards of behavior and apply a systematic decision-making process to these situations.	15 hours
7	7 Specialized Equipment: This course provides process and repair information to technicians for specific equipment within the employer's facility. Equipment may include, but not be limited to, the following: Laboratory Equipment, Hematology Instrumentation, Sterilization and Decontamination, Refrigeration and Air Conditioning, Medication Packaging and Delivery Systems, Patient Monitoring, Cardiac, Ultrasound Physics/Imaging Equipment, Vascular/Fetal Doppler Monitoring Systems, Diagnostic Equipment, and Respiratory Care Equipment.	90 hours
TOTAL HOURS		305 hours