

Instrument Repair Technician

PEIMS Code: N1170196

Abbreviation: INSTTECH

Grade Level(s): 10-12

Award of Credit: 1.0

State Approved Innovative Course

- Districts must have local board approval to implement innovative courses.
- In accordance with Texas Administrative Code (TAC) §74.27, school districts must provide instruction in all essential knowledge and skills identified in this innovative course.
- Innovative courses may only satisfy elective credit toward graduation requirements.
- Please refer to [TAC §74.13](#) for guidance on endorsements.

Course Description:

In the Instrument Repair Technician course, students will build on preexisting knowledge and skills in music to provide instrument repair. Districts are encouraged to provide instruction in a supervised real-world setting. Instrument repair requires a technical knowledge and skill in the areas of employability skills, customer service, problem solving, mechanics, acoustics, and tool operation. Students will focus on planning for, managing, and providing instrument repair service on brass, woodwind, string, and percussion instruments, with the exception of pianos. This course, along with a planned advanced course, will provide the required knowledge and skills to become a repair technician immediately upon graduation.

Essential Knowledge and Skills:

- (a) General Requirements. This course is recommended for students in Grades 10-12. Recommended prerequisite: one credit from courses listed in the Fine Arts Chapter 117, Subchapter C, Music or Music Studies. Students shall be awarded one credit for successful completion of this course.
- (b) Introduction.
 - (1) The fine arts incorporate the study of dance, music, theatre, and the visual arts to offer unique experiences and empower students to explore realities, relationships, and ideas. These disciplines engage and motivate all students through active learning, critical thinking, and innovative problem solving. The fine arts develop cognitive functioning and increase student academic achievement, higher-order thinking, communication, and collaboration skills, making the fine arts applicable to college readiness, career opportunities, workplace environments, social skills, and everyday life. Students develop aesthetic and cultural awareness through exploration, leading to creative expression.

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Creativity, encouraged through the study of the fine arts, is essential to nurture and develop the whole child.

- (2) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.
- (c) Knowledge and Skills.
 - (1) Employability skills. The student demonstrates necessary skills for career development and successful completion of course outcomes. The student is expected to:
 - (A) identify and demonstrate employable work behaviors such as regular attendance, punctuality, maintenance of a professional work environment, and effective written and verbal communication;
 - (B) identify and demonstrate positive personal qualities such as authenticity, resilience, initiative, and a willingness to learn new knowledge and skills;
 - (C) demonstrate professional standards and personal qualities needed to be employable such as self-discipline, positive attitude, integrity, leadership, appreciation for diversity, customer service, work ethic, and adaptability with increased fluency;
 - (D) solve problems and think critically;
 - (E) exhibit leadership skills and function effectively as a team member;
 - (F) demonstrate the ability to cooperate, contribute, collaborate, and accept constructive criticism as a member of a group to achieve a positive collective outcome;
 - (G) analyze and apply health and wellness concepts related to music practice such as body mechanics, repetitive motion injury prevention, first-aid training, hearing protection, vocal health, hydration, and appropriate hygienic practices; and
 - (H) describe ethical and legal responsibilities in relation to the field of instrument repair.
 - (2) Employability skills. The student identifies various employment opportunities and requirements in the instrument repair field. The student is expected to:
 - (A) identify job opportunities as well as accompanying duties and tasks;
 - (B) identify and discuss certifications for instrument repair-related careers;
 - (C) develop a personal career plan along with the education, job skills, and experience necessary to achieve career goals;
 - (D) develop a resume or a portfolio appropriate to a chosen career plan; and
 - (E) role play interview skills for successful job placement.
 - (3) Problem-solving skills. The student identifies and addresses various problems that are presented with instruments or problems that may arise from the repair process. The student is expected to:

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- (A) employ critical-thinking skills with increased fluency both independently and in groups to solve problems and make decisions;
 - (B) analyze elements of problems to determine current issues;
 - (C) research and apply knowledge of current treatments and processes to repair situations;
 - (D) develop creative and innovative solutions where diagnosis is not clear or solution is not possible;
 - (E) curate a ticketing system to log inbound orders, those in process, and those completed; and
 - (F) research and employ preventative maintenance techniques with campus instruments and share with customers as part of ticketing process.
- (4) Customer service. The student interacts with various individuals and provides appropriate response time, empathy, and resolution. The student is expected to:
- (A) improve productivity and deliver faster service using available technologies;
 - (B) provide self-service tips and customer control over small items;
 - (C) provide an opportunity for critical feedback to improve the customer experience;
 - (D) review, reflect, and react appropriately to critical feedback;
 - (E) employ a system of communication across various channels;
 - (F) deliver services at an agreed upon length of time; and
 - (G) provide courteous and professional customer service.
- (5) Mechanics. The student describes and analyzes the mechanics of sound. The student is expected to:
- (A) describe the physics of sounds using appropriate terminology and layman's terms;
 - (B) research the history of various instruments to determine how and why sound is produced in the current manner;
 - (C) compare and contrast the mechanics of brass, woodwind, strings, and percussion sounds; and
 - (D) follow a cycle of research, repair, and test until reaching satisfactory results.
- (6) Acoustics. The student analyzes acoustics and engages in problem solving relating to acoustics. The student is expected to:
- (A) evaluate exemplary and varying acoustic examples using recorded and live performances;
 - (B) analyze advanced musical textures while using a melodic reading system;
 - (C) explain concepts of music notation, intervals, and chord structure using appropriate terminology and layman's terms;
 - (D) analyze concepts of balance and blend using appropriate terminology and layman's terms;

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- (E) analyze concepts of music such as rhythm, meter, melody, harmony, texture, key, expression markings, dynamics, and timbre in recorded and live performance; and
- (F) analyze issues of imbalance and out of tune in recorded and live performance.
- (7) Tool operation. The student determines and uses appropriate tools to resolve an instrument issue. The student is expected to:
 - (A) diagnose the tool-based instrument issue presented and select a solution to resolve it;
 - (B) evaluate aesthetics post-repair and ensure the instrument is in playing condition;
 - (C) demonstrate attention to detail and fine motor skills during repair;
 - (D) describe and demonstrate use of brass repair processes and tools, including chemical cleaning, valve alignment, soft soldering, dent removal, fit and function of parts, spot lacquering and soft plating, rotor assembly and tying, and slide work;
 - (E) describe and demonstrate use of woodwind repair processes and tools, including disassembly, tenon fitting, cork repair, key fitting, dent removal, replacing worn padding, tone hole leveling, regulation and adjustment, metal finishing, body straightening, alignment, crack repair, spring replacement, proper care of wood, spot lacquering, soldering, and soft and silver soldering;
 - (F) describe and demonstrate use of strings repair processes and tools, including bridge cutting, bow re-hair and repair, crack repair, finish touch up, peg fitting, fingerboard repair, leveling, and resetting, restringing, neck setting, nut and button repair, re-fret adjustment, fret leveling, and radiusing;
 - (G) describe and demonstrate use of percussion repair processes tools (with the exception of piano), including head replacement and tuning, hardware part replacement, tuning gauge installation and repair, mallet restringing, and tune-ups; and
 - (H) evaluate repairs and test for working order by means of a play test.

Recommended Resources and Materials:

- Brass instrument student repair kit (e.g., burnisher, horn cord, valve port measuring tool, mallets, hammers, hand tubing shrinker, valve guides, dent remover)
- Woodwind instrument student repair kit (e.g., pad sets, screws and parts, rods, hooks, shorteners, screwdriver sets, plier sets)
- Percussion instrument student repair kit (e.g., multi-tools, drum keys, washers, sleeves, snare cord, drumheads, rims)
- Stringed instrument student repair kit (e.g., bridge, tuning pegs, strings, bow hair, chinrest)
- Other consumable supplies (e.g., lacquer, cleaning agents, oils)
- Instruments for class work will be provided.
- Other instruments may be brought in by the student after all regular course work is completed and with instructor approval.

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Recommended Course Activities:

- Diagnose and articulate common problems with brass, woodwind, percussion, and stringed instruments.
- Determine and implement proper repair techniques for common problems associated with brass, woodwind, percussion, and stringed instruments.
- Determine and implement proper maintenance techniques that can help avoid issues caused by negligence and improper care.
- Develop proper “emergency repair procedures” that may be used when taking an instrument to a repair shop is not an immediate option.
- Determine which repairs may be performed with a minimal repair kit and what should be addressed by a professional repair technician.
- Compile a list of five band and five orchestra instrument repair resources/vendors; list resource citations and vendor descriptions and contact information and describe the services provided by each.
- Incorporate campus-based needs for instrument maintenance and repair (e.g., school inventory and student instruments) through on-site instrument repair facility and ticketing system.

Suggested methods for evaluating student outcomes:

- Student self and peer evaluations of employability skills using a rubric
- Customer review and feedback from instrument repair ticketing system
- Rubric to assess knowledge and skill attainment of maintenance and repair work
- Rubric to assess knowledge and skill attainment of customer service
- Written assessment to assess knowledge attainment and the ability of the student to provide answers and explanations to questions relating to course content in mechanics and acoustics
- Skill-based assessment to assess skill attainment and the ability of the student to explain his/her process relating to maintenance and repair
- Completion of designated repairs
- Mid-term and final exams

Teacher qualifications:

An assignment for *Instrument Repair Technician* is allowed with one of the following certificates.

- All-Level Music.
- Grades 6-12 or Grades 9-12 Music.
- High School Music.
- Music: Early Childhood-Grade 12.
- Secondary Music (Grades 6-12).
- Trade and Industrial Education: Grades 6-12. This assignment requires appropriate work approval.
- Trade and Industrial Education: Grades 8-12. This assignment requires appropriate work approval.

An educator must hold a certificate, diploma, or Associate of Applied Science from recognized repair technician program (see the Successful Piloting Data and Evidence section for recognized institutions) or have completed an apprenticeship in the instrument repair field.

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At least two years within the last ten years (with AAS) or five years within the last ten years (with diploma) with related instrument repair via employment, self-employment, or other related organization.

Additional information: