



National Center for Aviation Training (NCAT) Equipment Report

December 2010

Appropriations Committee

Date February 4, 2011

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Introduction/Summary

The National Center for Aviation Training (NCAT) technical training advisory board will be created to aid the aerospace industry in Kansas and enable training opportunities that allows the Kansas aviation industry to compete in a global economic environment. This board will be called the State Aviation Technical Training Board (SATTB). It will be executed by industrial representatives through an executive committee comprised of representatives from Boeing, Bombardier-Learjet, Cessna, Hawker Beechcraft and Spirit AeroSystems. Wichita State University (WSU) and the National Institute for Aviation Research (NIAR) will administer the technical training board. A representative from Wichita Area Technical College (WATC) and a representative from Sedgwick County will also be non-voting members of the board to coordinate activities with the training offered by WATC as well as equipment of other infrastructure concerns within the NCAT building.

Each program year, the industry's most pressing training needs will be identified by industry representatives on the executive committee and will be matched to existing expertise within Kansas to offer unique training opportunities within the aerospace cluster in Kansas. The equipment funded via this program will be selected from the five member aviation industry executive committee. Each equipment purchase will be selected with a budget and tied to definitive training deliverables to increase competitiveness within Kansas. WSU will work closely with industry representatives who serve as points of contact and monitor the progress of the equipment purchases along with the link to the training opportunities for the aerospace cluster. WSU will provide a summary report each year which details expenditures made as part of this program to the board and legislature.

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Board Membership

Aviation Board Members

Aviation Board Chairman, 2010-2011

John Dieker email : john.dieker@aero.bombardier.com
Vice President of Operations
Bombardier-Learjet

Jim Walters email : JWalters@cessna.textron.com
Senior Vice-President, Human Resources
Cessna Aircraft

Jeff Turner email : jeffrey.l.turner@spiritaero.com
President and CEO
Spirit AeroSystems

Jeff Jones email : Jeff_Jones@hawkerbeechcraft.com
Vice President, Safety Quality, Training, Mfg Tech
Hawker Beechcraft

Brad Gorsuch email : brad.gorsuch@boeing.com
Director of Operations
Boeing Defense, Space & Security

Ex-Officio Board Members

Bill Buchanan email : wbuchana@sedgwick.gov
County Manager
Sedgwick County Government

Ray Frederick email : RFrederick@watc.edu
Interim President
Wichita Area Technical College

Board Administrator

John Tomblin email : john.tomblin@wichita.edu
Executive Director, NIAR
Wichita State University

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Legislative Language

"That during the fiscal year ending June 30, 2011, notwithstanding the provisions of any other statute, in addition to the other purposes for which expenditures may be made from the aviation infrastructure account of the state economic development initiatives fund for fiscal year 2011 by Wichita State University by this or other appropriation act of the 2010 regular session of the legislature, the moneys appropriated in the aviation infrastructure account of the state economic development initiatives fund for fiscal year 2011 may only be expended for training equipment expenditures of the National Center for Aviation Training.

(d) During the fiscal years ending June 30, 2010, and June 30, 2011, in addition to the other purposes for which expenditures may be made by Wichita State University from moneys appropriated from the state general fund or any special revenue fund for the above agency for fiscal year 2010 or fiscal year 2011 by chapter 124 or chapter 144 of the 2009 Session Laws of Kansas, or by this or other appropriation act of the 2010 regular session of the legislature, expenditures shall be made by Wichita State University from the state general fund or from any special revenue fund for fiscal year 2010 and fiscal year 2011, after consultation with the National Institute for Aviation Research, to provide for the establishment of a technical training board: Provided, That, except as otherwise provided in this subsection (d), such board shall be similar in composition to the aviation research board and shall advise the president of Wichita State University, and others representing Wichita State University, on all expenditures from the aviation infrastructure account of the state economic development initiatives fund for fiscal year 2010 and fiscal year 2011: Provided further, That such board shall review and evaluate all such expenditures: And provided further, That the executive director of the National Institute for Aviation Research shall be the administrator for the technical training board: And provided further, That the membership of the technical training board shall include representatives of Sedgwick County and representatives of the Wichita Area Technical College as ex-officio, nonvoting members: And provided further, That the technical training board shall prepare and submit a report to the legislature, which shall be presented to the education budget committee of the house of representatives and to the appropriate subcommittee of the ways and means committee of the senate, not later than the 10th calendar day of the 2011 regular session of the legislature, detailing the findings of the technical training board regarding the expenditures by Wichita State University from the aviation infrastructure account of the state economic development initiatives fund for fiscal year 2010 and fiscal year 2011."

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SATTB Operational Flow

Board advisory to what organization	The President of Wichita State University, and others representing Wichita State university
Board Membership	Such board shall be similar in composition to the aviation research board; 1 member from each OEM, SEDCO and WATC as non voting members
Executive Director	The Executive Director of the National Institute for Aviation Research shall be the administrator for the technical training board
Expenditures from the aviation infrastructure account of the state economic development initiatives fund	Expenditures shall be made by Wichita State University following all State of Kansas guidelines from the state general fund or from any special revenue fund
Reporting	Executive Director of SATTB prepares and SATTB approves

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State of Kansas and Wichita State University Purchasing Guidelines

The following is a summary of the Wichita State University purchasing guidelines. Details may be found in chapter 14 of the Wichita State University Policies and Procedures Manual (http://webs.wichita.edu/inaudit/ch_14.htm).

General Purchasing Policies

All purchases of materials and contractual services in the amount of \$5,000 or more will be made by the Office of Purchasing. This office also manages and controls the system for direct departmental purchases less than \$5,000. The Office of Purchasing establishes contractual service agreements for professional services and service maintenance agreements and maintain all statewide open-end contracts. The Office of Purchasing cannot purchase items for individuals for their personal use and as a general policy, no University purchase orders will be awarded to University employees.

State Contracts for Supplies and Services:

Contracts for commonly used equipment, supplies, and services have been developed by the State of Kansas Division of Purchases. A complete listing of state contracts is available at the Office of Purchasing. Copies and updates of these contracts are maintained by the Office of Purchasing and are forwarded to departments expected to have need for the items covered by the contract. State contracts for commonly used equipment and materials must be utilized unless it can be clearly demonstrated that an alternative purchase would be in the best interest of the University. Approval by the Office of Purchasing is required when deviating from this policy, **prior to acquisition**.

Used Equipment:

The University does not generally purchase used equipment. However, if it can be demonstrated that it is advantageous to do so, used equipment may be purchased from an established and reliable vendor of the type of equipment to be purchased. Normal purchase procedures are required for this type of purchase.

Purchases Less Than \$5,000

Many items are required to be purchased using state or local contracts, University sources, Kansas State Use Catalog, or otherwise require advance approval from the University, the Kansas Board of Regents. For those goods and services that are not available from one of the above sources, departments may be authorized to make purchases direct from any vendor when the delivered

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dollar value of the purchase is less than \$5,000, no additional orders for like products or services will be placed again within 30 days (which would make the overall accumulated purchase exceed the \$5,000 limit), or the purchase of the desired product or service is not otherwise restricted. Departments are responsible for checking to see if their desired purchases are restricted items and are encouraged to contact the Office of Purchasing for help in doing so.

Some contracts allow for an exception to be granted prior to purchase for items that are on contract, but are found at a lower price elsewhere with the same quality and specifications. A Prior Authorization for Off-Contract Purchase form shall be completed by the department and submitted, along with an indication of the funding source, to the Office of Purchasing for consideration. Certain items such as personal computer systems and certain vendors such as those in the Kansas State Use Catalog are not subject to granting of this exception.

The Office of Internal Audit and the Office of Purchasing will conduct periodic audits to determine whether or not items are being purchased that are available from University sources or from state-contracted vendors, unauthorized items are being purchased, and/or purchases are being split up into increments of less than \$5,000 (in order to bypass procedures for larger purchases). They will also check to see how effectively departments are making follow-up inquiries to obtain credit on tax charged by vendors, accurate and prompt notification of items to the University's Accounts Payable Department, and whether adequate departmental control records are being kept. Departmental delegated purchasing authority can and will be revoked by the Director of Purchasing if found to be abused or used irresponsibly.

Purchases Greater Than \$5,000

Competitive bids on purchases of \$5,000 or more, including purchases using research or grant funds, will be obtained by the Office of Purchasing, either by telephone or written request. The processing time for award of a purchase order could be a few days to multiple weeks depending upon the complexity of the purchase. The Office of Purchasing will conduct all negotiations with vendors in cooperation with the respective department. All bids, regardless of the source of funds, that are estimated to be in the amount of \$50,000 or more, must be advertised and open for a minimum of two (2) weeks and processed with the receipt of formal written bids.

Specifications

The Office of Purchasing has authority to challenge an ordering department concerning the quality, quantity, and type of material requested in order to serve the best interests of the University. However, the final decision and the

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responsibility for justification of the quality and quantity rests with the user department. A department will not be asked to accept inferior products, only to evaluate recommended alternatives.

Preparing Specifications:

Specifications should be developed with the knowledge that a bid shall be awarded to the bidder who submits the lowest price for a good or service that meets the stated specifications with delivery within a time frame that meets the University's need and is reasonable for the particular industry under current market conditions.

In obtaining material or equipment which meets the requirements for performance and quality, the preparation of clear and complete specifications is essential. Specifications may be as simple as a list of requirements that could be described over the telephone, or very complex requiring detailed explanation in writing. Kansas statutes prohibit specifications from being fixed in a manner to effectively exclude any responsible bidder from offering a comparable product or service. The Office of Purchasing will assist in the preparation of specifications upon request.

In general, specifications should be as simple as possible while specific enough to assure that no loophole exists by which a vendor may take advantage of competitors or the buyer. Specify the brand and model number of the desired equipment (e.g, Model 351OD ATT facsimile or equivalent) including the names and model numbers of two or more manufacturers whenever possible. Identify the features and/or characteristics considered essential to the function or intended use of the product. Flexible specifications allow more competition and better pricing.

Specifications should be edited for nonessential proprietary features or characteristics of the named brands which tend to effectively exclude competition in bidding. Minor deviations in size and operational characteristics from those set forth in the specifications will be considered when such deviations do not deter the user from accomplishing the intended use or function at the desired level of performance.

Ethical Conduct and Vendor Representatives

Departments should always contact more than one vendor whenever possible and be sure to provide each with exactly the same information to obtain multiple price quotes. Inform sales representatives that several sources are being evaluated, but do not discuss the amount budgeted for the purchase or prices offered by competitors. Discuss all aspects of the needed product using a life-cycle approach. Learn about the long-term implications of owning the product with respect to reliability, availability, and cost of maintenance and repairs, operational skills required for its use, trade-in-value of unit at the end of cycle, energy consumption, and other such operating concerns. Have the vendor provide all of the technical information needed to write a complete and detailed

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specification. Be wary of overreacting to vendor-created crises that call for a hasty decision such as an upcoming price increase or potential stock-out of the desired product and do not offer verbal commitments to buy (the University is committed only by means of an authorized purchase order). The purchase requisition should be submitted as early as possible and should include pertinent information about the suggested vendor such as the name of the company, their representative, address, and telephone and fax number.

Conflict of Interest:

The State of Kansas has statutory laws covering gratuities and conflict of interest which provide that, among other things, no state employee in his or her capacity shall participate in the making of a contract with any person or business with which the employee has a substantial interest. No employee of the State of Kansas may accept gifts, gratuities, or special discounts from persons or firms having business with any state agency or governmental entity. These laws apply to all individuals on the state payroll, regardless of the type of funds used (general use, restricted fees, research, endowment, etc.). Only gifts donated to the University through the WSU Foundation are acceptable.

Externally Sponsored Research Programs

Procurement for externally sponsored research programs must comply with the following: University policies; state or federal laws and regulations; and requirements of the funding source. All procurement for externally sponsored research programs will be processed through the Office of Purchasing. Federal procurement standards¹ and any special constraints imposed by the sponsoring agency must be observed. Expenditures require funding approval from the Office of Research Administration and all applicable research budgets and purchasing requisitions shall be routed through the Office of Research Administration prior to forwarding to the Office of Purchasing.

Ordering From Kansas Correctional Industries and Organizations Listed with the Kansas State Use Catalog

There are a number of products and services available from certain state agencies and organizations listed with the Kansas State Use Catalog. Kansas law mandates that such suppliers be used by other state agencies. If the suppliers are unable to supply the product ordered or cannot meet delivery requirements, the ordering department will be notified immediately and the Office of Purchasing will work with the department to obtain the required statutory exceptions to proceed pursuant to normal purchasing policies and procedures. Departments seeking an exemption for the procurement of consumable supplies or services may do so through the Office of Purchasing on a case-by-case basis. If an exemption is granted, a copy of the written approval must accompany the purchase requisition.

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Anti-Kickback

Purpose:

To state University policy with regard to the establishment of procedures designed to prevent and detect possible violations of 41 U.S. Code Sections 51-58 (the Anti-Kickback Act of 1986).

Preamble:

The Anti-Kickback Act of 1986 was passed to deter subcontractors from making payments, and contractors from accepting payments, for the purpose of improperly obtaining or rewarding favorable treatment in connection with a contract or contractual action entered into by the United States for the purpose of obtaining supplies, materials, equipment, or service of any kind.

Policy Statement:

1. When the University has reasonable grounds to believe that a violation of the Anti-Kickback Act of 1986 may have occurred, the University shall promptly report in writing the possible violation. Such reports shall be made to the inspector general of the contracting department or agency of the United States, the head of the contracting department or agency of the United States if the department or agency does not have an inspector general, or the Department of Justice.
2. The University shall cooperate fully with any Federal agency investigating a possible violation of the Anti-Kickback Act of 1986.
3. The University shall incorporate the following language in all subcontracts entered into by the University to obtain supplies, materials, equipment, or service of any kind in connection with a University contract with a department or agency of the United States that exceed \$100,000.
 - a. When the university has reasonable grounds to believe that a violation of the Anti-Kickback Act of 1986 may have occurred, the university shall promptly report in writing the possible violation. Such reports shall be made to the inspector general of the contracting department or agency of the United States, the head of the contracting department or agency of the United States if the department or agency does not have an inspector general, or the Department of Justice.
 - b. The university shall cooperate fully with any Federal agency investigating a possible violation of the Anti-Kickback Act of 1986.

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- c. The Contracting Officer may (1) offset the amount of the kickback against any monies owed by the United States under the prime contract and/or (2) direct that the Prime Contractor withhold from sums owed a contractor under the prime contract the amount of the kickback. The Contracting Officer may order that monies withheld under subdivision c. (1) of this clause be paid over to the United States Government unless the Government has already offset those monies under subdivision c. (2) of this clause. In either case, the Prime Contractor shall notify the Contracting Officer when the monies are withheld.

- d. The university agrees to incorporate the substance of this clause, including subparagraph d., in all subcontracts under this contract which exceed \$100,000.

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Protocol and Timeline for Equipment Expenditures

1. Initial equipment list will be collected by NIAR/WSU from WATC, Sedgwick County, WSU/NIAR and any aviation company which describes specific training needs. This list will be developed prior to the first board meeting each year with the following information:

- (1) Detailed Equipment Description
- (2) Estimated Cost
- (3) Justification for equipment in supporting the training needs of the aviation industry

Timeframe : July / August

2. This equipment list will be combined and summarized prior to the SATTB board meeting for board member review prior to the meeting. This will be sent to each board member via email at least two weeks prior to the SATTB board meeting. These should be prioritized by the aviation industry to fit within the available yearly budget.

Timeframe : August / September

3. The SATTB board meeting will approve an equipment expenditure list along with an estimated budget for purchasing.

Timeframe : August / September SATTB Board Meeting

4. Approval by the President of WSU (or others representing WSU)

Timeframe : following August / September SATTB Board Meeting

5. Following the State of Kansas and WSU procurement guidelines, purchases will be made according to the approved equipment list. A monthly update will be provided via email to all board members showing an estimated versus actual cost. This monthly update will also be transmitted to the SCTETA board for inclusion in their monthly meeting.

Timeframe : September through December

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6. SATTB board meeting to review progress to date and reconciliation of any open action items. Final expenditure plan approved for the existing or anticipated balance of the equipment funds. Draft of the expenditure report to the legislature to be reviewed at that time.

Timeframe : December SATTB Board Meeting

7. Approval by the President of WSU (or others representing WSU)

Timeframe : following December SATTB Board Meeting

8. Report prepared and delivered to KS legislature by WSU

Timeframe : January

9. Finalized purchasing per the SATTB board approved expenditure plan

Timeframe : January through June

10. Updated final report for the SATTB board and KS legislature

Timeframe : July

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NCAT FACILITY

The National Center for Aviation Training built by Sedgwick County fuses Kansas' aviation experience and expertise with cutting-edge instructional techniques and technology to forge a new educational standard. The 224,000 sq. ft. facility will provide for significant growth capacity for students to engage in aviation and advanced manufacturing training along with strong FAA involvement and support. The \$50 million campus offers capacity to train up to 1,500 students and the Jabara Airport location allows ready access to aircraft for hands-on training.

Figures 1 – 3 show the layout of the facility along with the specific curriculum areas being focused on with these equipment expenditures. All equipment purchases using these funds will be located in the NCAT facilities.

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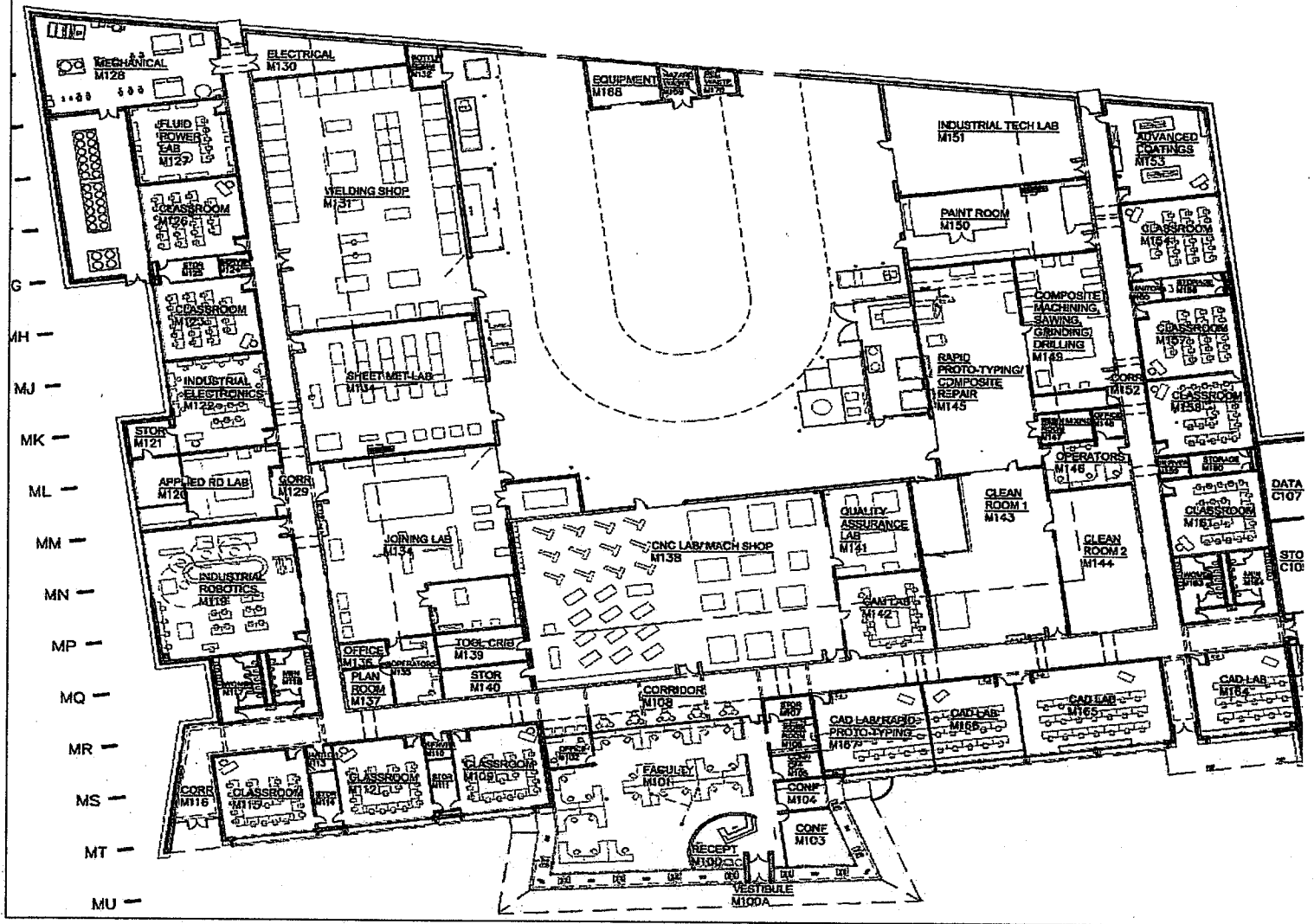


Figure 1
 Manufacturing Building
 Building 200
 1st Floor

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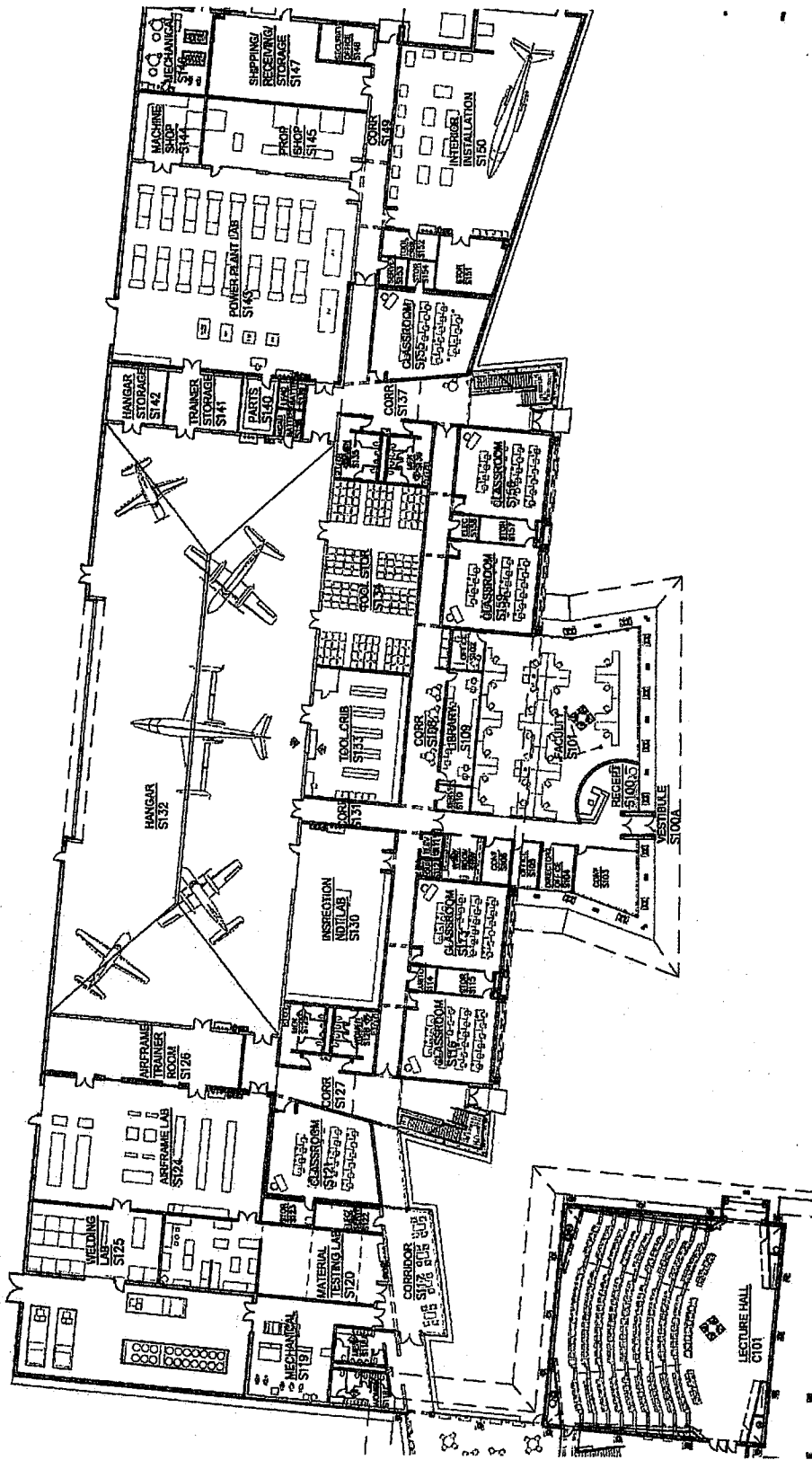


Figure 2

Aviation Maintenance Building
 Building 300
 1st Floor

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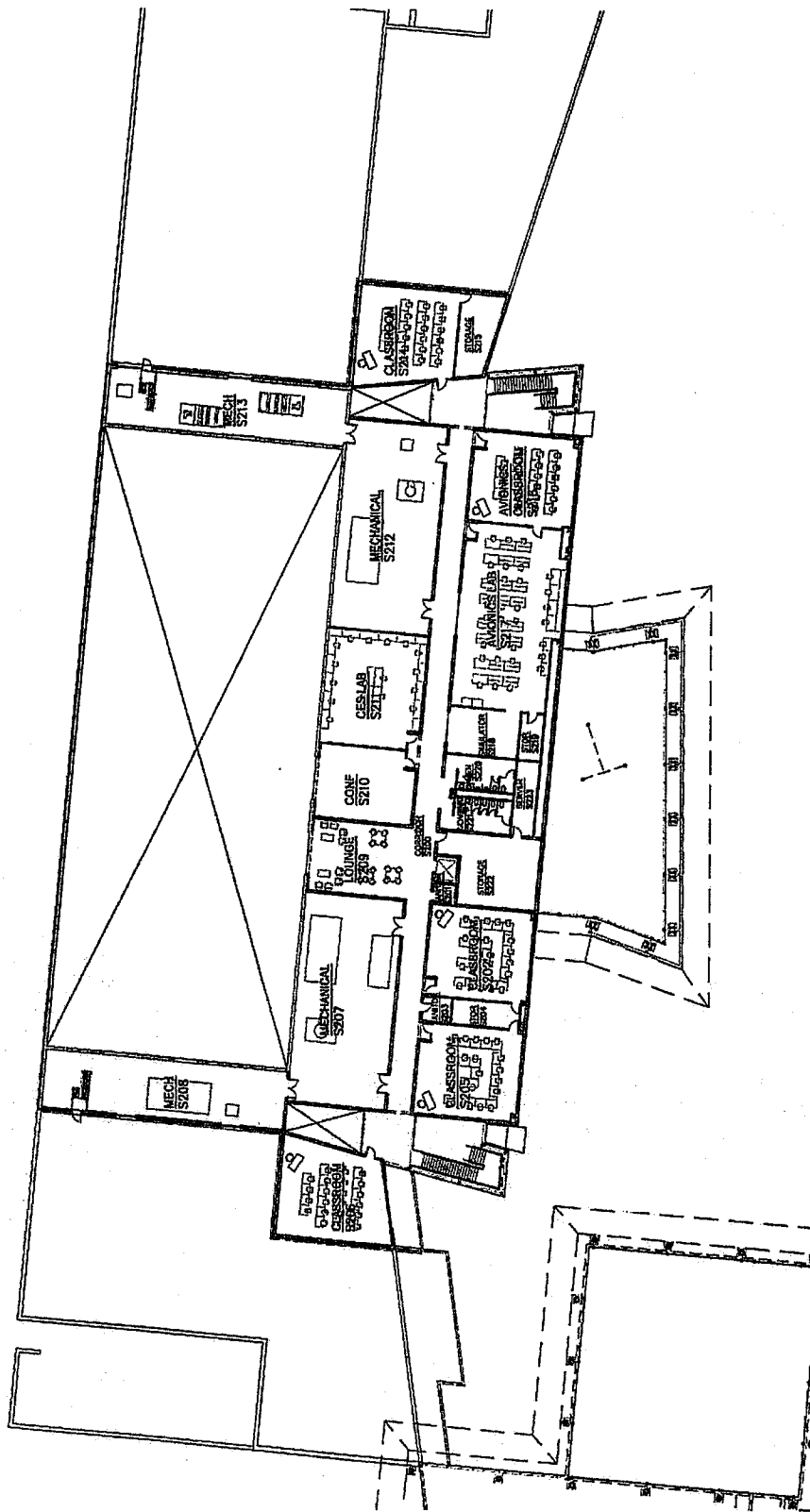


Figure 3

Aviation Maintenance Building
 Building 300
 2nd Floor

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Description	Amount Approved	Percentage to Total
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MANUFACTURING

CAD/CAM - CATIA	\$553,600	11.07%	46.04%
Composites	\$263,021	5.26%	
Robotics	\$416,000	8.32%	
Machining	\$370,603	7.41%	
Paint Applications and Advanced Coatings	\$585,955	11.72%	
Electromechanical/Mechanical Systems	\$113,050	2.26%	

AVIATION MAINTENANCE

Avionics	\$139,198	2.78%	46.81%
Airframe / Powerplant	\$1,922,224	38.44%	
Non-Destructive Inspection	\$279,000	5.58%	

NCAT GENERAL

Data Center, Classrooms, Distance Learning	\$357,349	7.15%	7.15%
TOTAL REQUESTED	\$5,000,000	100.00%	
TOTAL BUDGET	\$5,000,000		
REMAINDER	\$0		

**DETAILED LISTING BY CURRICULUM AND
NCAT FACILITY LOCATION (Room #)**

		Budget 11/30/2010	Not to Exceed
Manufacturing		\$2,302,229	
1	CAD/CAM - CATIA	\$553,600	
1A	<u>Rooms M164, M165, M166</u>		
	DVI System		56,100
	Monitors/Room Speakers		16,000
	Commercial Licenses		90,000
	High End Workstations		11,500
	Portable Inspection Devices and Scanning Head		100,000
	Laser Tracker and Laser Scanning Technologies		280,000
			\$ 553,600.00
2	Composites	\$263,021	
2A	<u>Rooms M143-M147, M149 Composites Lab</u>		
	Laser Projection		82,500
	Debulk and Cure Tables		24,000
	Micro Duster Air Filtration		26,000
	3' x 3' Oven		20,000
	Saws		13,500
	Processing and Storage (6 rooms)		97,021
			\$ 263,021.00
3	Advanced Manufacturing/Robotics	\$ 416,000.00	
3A	<u>Room M119 Robotics Technology</u>		
	Basic/ Advanced Programmable Logic Controls Equipment		98,000
	Industrial Instrumentation Trainers		112,000
	Introductory Robotics Programming Equip		16,000
	Material Handling and Machining Robot		100,000
			\$ 326,000.00

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3B	<u>Rooms M120, M134, M134B Advanced Joining</u>		
	Robotic Rail System		90,000
	e-NDE Process Control		0
	Robotic End-Effector for Composite Drilling		0
			\$
			90,000.00
4	Machining	\$370,603	
4A	<u>Room M138 Machine Lab</u>		
	Clausing Colchester Lathes (2)		55,700
	Bridgeport Mills		110,000
	HAAS SR100 Router		40,212
	HAAS Vertical Machining Center with 5-axis capability		96,579
	HAAS Vertical Machine w/2-axis capability		68,112
			\$
			370,603.00
5	Paint Applications & Advanced Coatings	\$585,955	
5A	<u>Room M150 Paint Lab</u>		
	Paint Application Equipment		45,956
	Color Technology		89,662
	Materials/Material Handling		56,499
	Safety/Maintenance		20,266
	Storage		29,073
	Paint Testing Equipment		36,544
			\$
			278,000.00
5B	<u>Room M151 Test Chamber Lab</u>		
	Corrosion Test Chamber		23,740
	Environmental Exposure Chambers		75,607
	Test Equipment		28,033
	Weathering Chambers		77,897
	Installation/Maintenance		9,685
			\$
			214,962.00
5C	<u>Room M153 Advance Coatings Lab</u>		
	Test Chambers		13,371
	Materials/Material Handling		34,843
	Safety/Maintenance		4,591
	Test Equipment		38,688
	Installation		1,500

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		\$	92,993.00
6	Electromechanical/Mechanical Systems	\$113,050	
6A	<u>Room M127 Electromechanical Lab</u>		
	Safety		6,900
	Direct and Alternating Current		46,500
	Industrial Wiring		4,800
	DC and AC Motors and Motor Control		54,850
		\$	113,050.00
Aviation Maintenance		\$2,340,422	
7	Avionics	\$139,198	
7A	<u>Room S219 Avionics Lab</u>		
	Digital Training Systems		139,198
		\$	139,198.00
8	Airframe/Powerplant	\$1,922,224	
8A	<u>Rooms S126, S124, S125 Airframe Trainer, Airframe, Weld Shop</u>		
	Systems Trainers, Cut away Articles		67,176
	Weld Shop Supplies		14,342
	Student Test Articles and Test Equipment		36,231
	Component Trainers		100,755
		\$	218,504.00
8B	<u>Rooms S143, S150, S145, S144 Power Plant Labs, Prop Shop, Machine Shop</u>		
	Power Plant Trainers		138,044
	Power Plant Equipment and Tools		141,847
	Propeller Equipment and Training Articles		14,169
	Power Plant (Engines)		1,063,384
	Supplies to Sustain Engines/Suppt Rebuilds		82,098
	Student Component Trainer Supplies		80,120
		\$	1,519,662.00
8C	<u>Rooms S132, S133, S138 Hanger, Tool Crib, Battery Room</u>		
	Hanger Maintenance, Tools and Supplies		95,879
	Training Materials for Aircraft & Aircraft Sprt		61,769
	Support items for all Labs and Hanger		17,775
	Battery Shop		

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		\$	184,058.00
9	Non-Destructive Inspection	\$279,000	
9A	<u>Room S130 NDI</u>		
	Lubricant Spectrometer, FTIR Analyzer, Viscometer, and Particle Counter		135,000
	Vibration Analyzer and Software		51,000
	Thermal Imaging Cameras		34,000
	Acoustic Emission System		13,500
	Eddy Current		45,500
		\$	279,000.00
NCAT General		\$357,349	
10	Data Center, Classrooms, Distance Learning	\$357,349	
10A	<u>Room C110 Data Center</u>		
	Desktop Virtualization		152,349
10B	<u>Classrooms</u>		
	Computers		125,000
10C	<u>Distance Learning</u>		
	HD monitors, cameras, speakers, microphones, software, video equip for 2 classrooms		80,000
		\$	357,349.00
		\$	5,000,000.00
		\$	5,000,000.00

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EQUIPMENT DESCRIPTION CORRESPONDING TO
AVIATION INDUSTRY NEED

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MANUFACTURING

Curriculum	Equipment	Approved Budget	Equipment Description Corresponding with Industry Need
CAD/CAM - CATIA	DVI System	\$56,100	<p>This system allows the instructor display to be projected out to all of the students' displays. When teaching CATIA, Fibersim, Analysis, etc. type courses the icons and options are fairly small. The projector(s) in each room helps to demonstrate the use of the software when teaching however in a lot of cases it can be hard for the attendees to see the screen clearly enough from the 2nd and 3rd row of the classroom. In addition, it allows the instructor to project to just certain students or bring a student's display to the instructor and/or projector. This helps when some students need more demonstration than others or if they have a circumstance that needs to be discussed amongst the group. We have a similar system although it is VGA in some of our rooms at NIAR and it has proven to be very beneficial for the attendees. This will make these three labs equivalent to M167.</p>
	Monitors/Room Speakers	\$16,000	<p>Some of the industry style courses are providing materials in an electronic form or are providing videos for the students to watch as they work. In addition, some of the instruction is done in a follow along fashion. The issue that arises is that it is very hard for the attendees to watch the instructor work and be able to work on the their machine at the same time. With dual monitors, this allows for an area to project the instructor's display to and/or to be used for pdf's or videos while the student does the work alongside on their first display.</p> <p>Front wall mounted speakers and all necessary audio hook ups for instructor computer along with laptop hook up. This would be nice for when you are presenting something to a class requiring sound.</p>
	Commercial Licenses	\$90,000	<p>More and more companies are asking us to help with various projects that require commercial licenses. We have the personnel and computer resources to help with these projects but the cost of commercial licenses makes it hard to ramp up effectively. With these in place we can help industry with their overload situations without them having to go outside of Kansas or hire a lot of people for a short term.</p>

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MANUFACTURING			
Curriculum	Equipment	Approved Budget	Equipment Description Corresponding with Industry Need
CAD/CAM - CATIA			
	High End Workstations	\$11,500	Three high end workstations for working with industry level CAD data. Allows us to handle the large data packages used by the aviation industry in order to better understand their requirements.
	Portable Inspection Devices and Scanning Head And Laser Tracker and Laser Scanning Technologies	\$100,000 \$280,000	We are doing more and more reverse engineering and we don't have easy access to the laser scanning equipment necessary to perform the job. We hope to get this equipment and be able to not only use it on projects but to integrate it with our CATIA labs to provide training on the use of reverse engineering software and its integration with CATIA. This is becoming more and more of a need in industry due to a lot of companies inspecting back to a 3D model instead of a printed drawing.
Composites			
	Laser Projection	\$82,500	Composite manufacturing industries are swiftly moving to the use of laser technology to ensure the most accurate ply orientation and ply placement during composite parts fabrication. With the purchase of this equipment WATC can create an advanced composite course. Graduates of the advanced course will provide composite manufactures with trained personnel capable of operating, maintaining and programming laser projection equipment.
	Debulk and Cure Tables	\$24,000	The cure tables will be used to cure laminates instead of using the ovens and autoclaves. This saves money and reduces landfill waste from the bagging supplies normally used during an oven cure operation. During fabrication, many of the new "out of autoclave" resin systems are dependent on multiple debulk cycles. The debulk tables reduce debulk time and the cost and waste of bagging materials used during debulk cycles.
	Micro Duster Air Filtration	\$26,000	The Micro dusters are needed to help insure the dust particle counts are at levels equal or better than industry clean rooms. The Micro Duster filters will be placed near the two ply cutting machines in the large layup room.

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MANUFACTURING			
Curriculum	Equipment	Approved Budget	Equipment Description Corresponding with Industry Need
Composites	3' x 3' Oven	\$20,000	The oven will have the same controller used for large ovens used in industry. This controller is capable of multi segment programming and programmed heat up/ ramp rates. Compared to the large ovens, this smaller oven is more efficient for small batch cure cycles and training of oven operation. The oven will be set up with a communications port so data / cure cycles can be archived in the same manner as the factory.
	Saws	\$13,500	The industrial saws selected for purchase are heavy duty construction. The same saws are used in industry to cut and trim composite parts and assemblies. Training on industry equipment and understanding how to safely operate and maintain this equipment prior to using them in the factory is important.
	Processing and Storage	\$97,021	This purchase would cover several items including: 1) room surveillance equipment that provides the ability to monitor, record and archive the time, date, temperature and humidity of all the rooms and freezer at NCAT 2) a dust particle collection pump providing the capability to measure air quality in the layup rooms. Air quality is a requirement of composite manufacturing and students will be trained in the importance of checking it 3) all appropriate safety equipment is included in this budget. Students must be trained to understand and properly use all safety equipment.
Advanced Manufacturing/Robotics			
	Basic/Advanced Programmable Logic Controls Equipment	\$98,000	These are beginning pieces of equipment will allow training to begin in PLC for industry and will allow the Robotics program to begin with the first certificate of completion of PLC for students interested in the Robotics AAS degree.
	Industrial Instrumentation Trainers	\$112,000	These trainers will provide the basic equipment needed to begin teaching several classes in the Robotics program. Needed for the first semester of the program.
	Introductory Robotics Programming Equipment	\$16,000	This system will provide the basic introductory equipment for ROB100 - this course is used in Robotics Technology and Electromechanical Systems.

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MANUFACTURING

Curriculum	Equipment	Approved Budget	Equipment Description Corresponding with Industry Need
Advanced Manufacturing/Robotics	Material Handling and Machining Robot	\$100,000	<p>To teach the student how to pick and place a part using vacuum. How to use auxiliary equipment to aid the robot in processing the part, to make use of interchangeable tooling to use the robot for multiple functions, and to machine a part using a pneumatic router. This cell will use vision to locate the shapes to be routed. It will also introduce advanced functions such as program shift and user frames to allow the student to teach a program on process stand #1 and transfer it to process stand #2. This robot is in the number one priority space because it will be used in ROB 100 which is required for both Robotics Program and Electromechanical Systems Technology Program .</p>

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MANUFACTURING

Curriculum	Equipment	Approved Budget	Equipment Description Corresponding with Industry Need
Advanced Manufacturing/Robotics	Robotic Rail System And e-NDE Process Control And Robotic End Effector for Composite Drilling	\$90,000	<p>Rail system will be used for facilitating interaction between the robots and the MTS FSW welder to achieve fully automated robotic cell. Students will receive education and training in coordinated robotic motion in a robotic cell equipped with industry-capable robots and manufacturing systems. The robot rail system will enable the currently installed lab robots to interact as well as to operate independently. It will provide a seventh axis to the ABB IRB 6600 robot, allowing it to interact with the ABB IRB 7700 robot and other production-capable lab equipment. Students will first learn to program the lab robots and to define their coordinated motion with CAD/CAM software. They will then learn to actually operate the robots for coordinated tasks to carry out drilling, fastening, welding, and other advanced automated assembly operations. Research will be carried out in advanced assembly and joining processing for aircraft structure development and maintenance.</p> <p>Students and researchers will receive education and training in advanced e-NDE (electronic Non-destructive Evaluation) techniques for joining and processing technologies. These new techniques are based on process monitoring and have been shown to increase the accuracy and precision of probability of detection (POD) analyses when compared to conventional inspection techniques for friction stir welding, for example. In FSW the transverse force feedback signal is correlated with defect formation. e-NDE is a real-time, non-destructive "green" evaluation system for predicting weld quality using feedback signals monitored during the welding process. It provides a control system with important feedback information about joint quality. The control system will be used in research to analyze the process parameters in terms of the feedback information to certify sound, flawless joints. Research will be conducted to extend e-NDE to real-time inspection to reduce and potentially eliminate the need for secondary inspection operations like X-ray, and ultrasonic inspection steps. Students will receive education and training in robotic drilling and machining of composites for fastening composites to composites and composites to metals. An advanced orbital end effector will give students experience in drilling through multiple layer stack-ups of composites and metals with state-of-the-art equipment. The system will provide researchers and developers with instrumented equipment for evaluating cutters and procedures for drilling advanced materials. Tooling and flexible fixturing components and units designed to enable the drilling of complex aircraft components will ensure students are trained in real-life applications.</p>

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MANUFACTURING			
Curriculum	Equipment	Approved Budget	Equipment Description Corresponding with Industry Need
Machining			
	Clausing Colchester Lathes	\$55,700	To serve students in lab and match machines purchased in FY2010.
	Bridgeport Mills	\$110,000	To update all mill machines in lab to current standard equipment.
	HAAS SR100 Router	\$40,212	Entrusted equipment from Haas; if not purchased by spring 2011, equipment will be removed by Haas and not replaced.
	Haas VF-2S5TR Vertical Machining Center w/ 5 axis capability	\$96,579	Entrusted equipment from Haas; if not purchased by spring 2011, equipment will be removed by Haas and not replaced.
	Haas VF-2S5TR Vertical Machining Center w/ 2 axis capability	\$68,112	Entrusted equipment from Haas; if not purchased by spring 2011, equipment will be removed by Haas and not replaced.
Paint Applications and Advanced Coatings			
	Paint Application Equipment	\$45,956	Spray guns and equipment used for application of interior and exterior aircraft coatings. Equipment is used in aircraft industry by paint suppliers, OEM's, and refinishers. Equipment covers variety of application methods used for items from small parts to full aircraft.
	Color Technology	\$89,662	Equipment used by aircraft paint suppliers, OEM's, refinish shops to develop color matches in standard and special effect coatings, and equipment used by aircraft paint suppliers and OEM's to evaluate color evaluation skill of technicians and painters.

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MANUFACTURING

Curriculum	Equipment	Approved Budget	Equipment Description Corresponding with Industry Need
Paint Applications and Advanced Coatings			
Materials/ Material Handling		\$56,499	Equipment used to prepare aircraft surfaces prior to coating application and to detail finished coating film. Equipment includes materials for masking, sanding, design layout, polishing and cleaning.
Safety/Maint- enance		\$20,266	Supplies for set-up, use, and maintenance of aerospace applications equipment.
Storage		\$29,073	Equipment for storage of materials, tools, test equipment, etc.
Paint Testing Equipment		\$36,544	Equipment used by aircraft paint suppliers, OEM's, refinish shops to develop color matches in standard and special effect coatings and testing equipment used to measure various properties of painted objects and for measurements during coatings application process.
Corrosion Test Chamber		\$23,740	Used for general testing of coatings and especially newer non-chrome primer technologies. Required by industry coatings specifications.
Environmental Exposure Chambers		\$75,607	Used to stress coated panels at extremes of temperature, at programmed intervals to simulate changes in climate due to altitude and test humidity resistance of painted parts. Testing is requirement of military and OEM specifications.
Test Equipment		\$28,033	Used by aerospace paint suppliers, military, and OEM's to study tensile properties of films of paint, adhesives, and sealants.
Weathering Chambers		\$77,897	Used for accelerated weathering testing of painted panels, product development and approval. Commonly used by aircraft paint suppliers, military, and OEM's to test and approve coatings for use on aircraft.
Installation/ Maintenance		\$9,685	Installation of machinery, access to water and/or electricity required for operation.

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MANUFACTURING

Curriculum	Equipment	Approved Budget	Equipment Description Corresponding with Industry Need
Paint Applications and Advanced Coatings			
	Test Chambers	\$13,371	To work with the paint booth and mixing room in the Paint lab in order to meet competencies outlined in the Paint program.
	Materials/ Material Handling	\$34,843	Supply lab for instruction on aircraft coatings blending and testing of wet and cured coatings. Equipment is representative of tools operated by lab technicians, engineers, and painters in the aircraft industry.
	Safety/ Maintenance	\$4,591	Safety and maintenance equipment for lab exercises.
	Test Equipment	\$36,688	Supply lab for instruction on aircraft coatings blending and testing of wet and cured coatings. Equipment is representative of tools operated by lab technicians, engineers, and painters in the aircraft industry.
	Installation	\$1,500	Installation of machinery, access to water and/or electricity required for operation.
Electromechanical/Mechanical Systems			
	Safety	\$6,900	IND 100 Industrial Safety training will be provided in the first semester of the Electromechanical Systems program.
	Direct and Alternating Current	46,500	IND 106 Direct and Alternating Current Circuits provided for training in electrical circuitry used in aviation production. Needed in the first semester of the Electromechanical Systems program.
	Industrial Wiring	\$4,800	IND 108 Industrial Wiring provides training for electrical wiring used in maintenance and repair of aviation production processes. Needed in the first semester of the Electromechanical Systems program.
	DC and AC Motors and Motor Control	\$54,850	IND 110 DC and AC Motors and IND 112 Fundamentals of Motor Controls - provides for training in the repair and maintenance of motors used in aviation production processes. Needed in the first semester of the Electromechanical Systems program.

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AVIATION MAINTENANCE

Curriculum	Equipment	Approved Budget	Equipment Description Corresponding with Industry Need
Avionics			
	Digital Training System	\$139,198	Simulators and test stations in order to create a teaching and learning environment for students for digital training of avionics instruction.
Airframe/Powerplant			
	Systems Trainers, Cut Away Articles	\$67,176	Trainers to assist with teaching of hydraulic, pressurization anti-skid and air conditioning for Airframe I and II students.
	Weld Shop Supplies	\$14,342	Tables, storage and vises for the welding shop for Airframe I and II students.
	Student Test Articles and Test Equipment	\$36,231	Pilot static system trainer for Airframe I and II students.
	Component Trainers	\$100,755	Trainers for voltage, brake drums, master cylinders, generators, starters, alternators, calipers and brake systems for Airframe I and II students.
	Power Plant Trainers	\$138,044	Trainers that simulate fuel systems carburetion, injection, electrical and thrust reverse for Powerplant I and II students.
	Power Plant Equipment and Tools	\$141,847	Instructor tools, generator test bench, valve grinder and compression tools, engine test kits and tools for Powerplant I and II students.
	Propeller Equipment and Training Articles	\$14,169	Propeller blade trainers, drive units and blade prop storage.
	Powerplant Articles (Engines)	\$1,063,384	New engines (Lycoming and Pratt Whitney) and tools for Powerplant I and II students to provide real world learning experiences on a variety of engines.

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AVIATION MAINTENANCE

E			
Curriculum	Equipment	Approved Budget	Equipment Description Corresponding with Industry Need
Airframe/Powerplant			
	Supplies to Sustain Engines/Support Rebuilds	\$82,098	Overhaul kits to enable the ability for students to re-build engines in existing planes. All supplies will be used in Powerplant I and II to teach re-building of turbine and reciprocating engines.
	Student Component Trainer Supplies	\$80,120	Carburetor, magneto overhaul kits for turbine and reciprocating engines for Powerplant I and II
	Hanger Maintenance, Tools and Supplies	\$95,879	Pressure washer, instructor tool sets, tool crib toolset, assorted hardware and high-temp degreaser cleaner to meet competencies for students in the General portion of the A&P program.
	Training Materials for Aircraft and Aircraft Support	\$61,769	Tools and equipment needed for support of all aviation programs that utilize the hanger.
	Support items for All Labs and Hanger	\$17,775	Support items for the labs and hanger for the aviation programs.
	Battery Shop	\$8,635	Aircraft batteries, battery charger and workbenches for the Powerplant I and II students.

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AVIATION MAINTENANCE

Curriculum	Equipment	Approved Budget	Equipment Description Corresponding with Industry Need
Non-Destructive Inspection	Lubricant Spectrometer, FTIR Analyzer, Viscometer, and Particle Counter	\$135,000	Simultaneous analysis of multiple wear metals in aircraft engine oil, analyze aircraft engine oil for oxidation, nitration, sulfation, water, coolant, fuel, soot, and additive depletion, determine the viscosity of aircraft lubricants, count wear metal particles in aircraft lubricating fluids and identify them with shape recognition software. This equipment is used to analyze engine and hydraulic fluids for serviceability in support of Airframe and Powerplant training. This type of analysis is common during aircraft servicing and troubleshooting. Cross over applications include ground transportation, oil and gas processing, agribusiness food and feed manufacture, chemical industries, and power generation. Students will learn to operate and calibrate instruments to industry specifications. Further instruction will be given on test result interpretation, failure levels, predicting failure timelines, determining preventative maintenance practices and their intervals.
	Vibration Analyzer and Software	\$51,000	Monitors and analyzes aircraft engine bearing for wear or damage. Vibration analysis can be used to identify causes of vibration (propellers, turbines, accessories) that lead to noise, structural fatigue and crew discomfort. Vibration analysis is used on both new products and on aircraft undergoing service. Cross over applications include ground transportation, oil and gas processing, agribusiness food and feed manufacture, chemical industries, and power generation. Students will learn to operate and calibrate instruments to industry specifications. Further instruction will be given on test result interpretation, failure levels, predicting failure timelines, determining preventative maintenance practices and their intervals.
	Thermal Imaging Cameras	\$34,000	Large area scanning for disbond and delaminated aircraft surfaces is especially important as more composite structures are introduced into service. This is a newer technology that is starting to be used more within the aircraft industry because of the speed and accuracy at which bonded structures can be evaluated. A secondary use is for aircraft electrical system scanning for heat producing electrical problems. Cross over applications include ground transportation and power generation. Students will learn to operate and calibrate instruments to industry specifications.

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AVIATION MAINTENANCE			
Curriculum	Equipment	Approved Budget	Equipment Description Corresponding with Industry Need
Non-Destructive Inspection			
	Acoustic Emission System	\$13,500	In-service monitoring of aircraft structures, particularly composite structures. The technology is designed to monitor structures while in service in real time or in capture time elapsed. This technology has been evolving for many years and is becoming more mature leading to its acceptance as a viable method of structural monitoring. Acoustic emission technology is vital to research efforts on aging aircraft structures and is also the leading technology in research being done on wind power generation structures. Cross over applications include ground transportation and power generation. Students will learn to operate and calibrate instruments to industry specifications. Further instruction will be given on installation and interpretation.
	Eddy Current	\$45,500	The Eddy Array modules add another capability to the ultrasonic phased array system. With the addition of the Eddy Array modules, the students will be able to take full advantage of the existing equipment for both education and also the industry research endeavors on the manufacture and repair of composite aircraft surfaces. Cross over applications include ground transportation, oil and gas processing, agribusiness food and feed manufacture, chemical industries, and power generation. Students will learn to operate and calibrate instruments to industry specifications.
NCAT GENERAL			
Data Center			
	Desktop Virtualization	\$152,349	Used to run any aviation industry programs/software at NCAT. Rapidly reconfigure NCAT computer labs for aviation industry training.
Classrooms			
	Computers	\$125,000	Replace outdated NCAT student computers to keep up with aviation industry standards.

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NCAT GENERAL			
Curriculum	Equipment	Approved Budget	Equipment Description Corresponding with Industry Need
Distance Learning	HD Monitors, Cameras, Speakers, Microphones, Software, Video Equipment	\$80,000	Equip classrooms at NCAT to accommodate video conferencing, video recording and interactive distance learning to train aviation workers remotely.

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