Capital Expenses: From Software to Shipping & Fabrications to Facilities

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Department of Mechanical Engineering

Session Outline

- Capital Expenses
- Capital Assets
- Cost Threshold
- Capitalizable Costs
- Non-Capitalizable Costs
- Budgeting Considerations
- Terms and Conditions
- Titling and Disposition

Learning Objectives

1. Clearly identify capitalized expenses
2. Be able to more effectively budget
3. Know what questions around seemingly “non-equipment” equipment should be asked
4. Better navigate terms and conditions
5. Become more familiar with UW resources on capital equipment

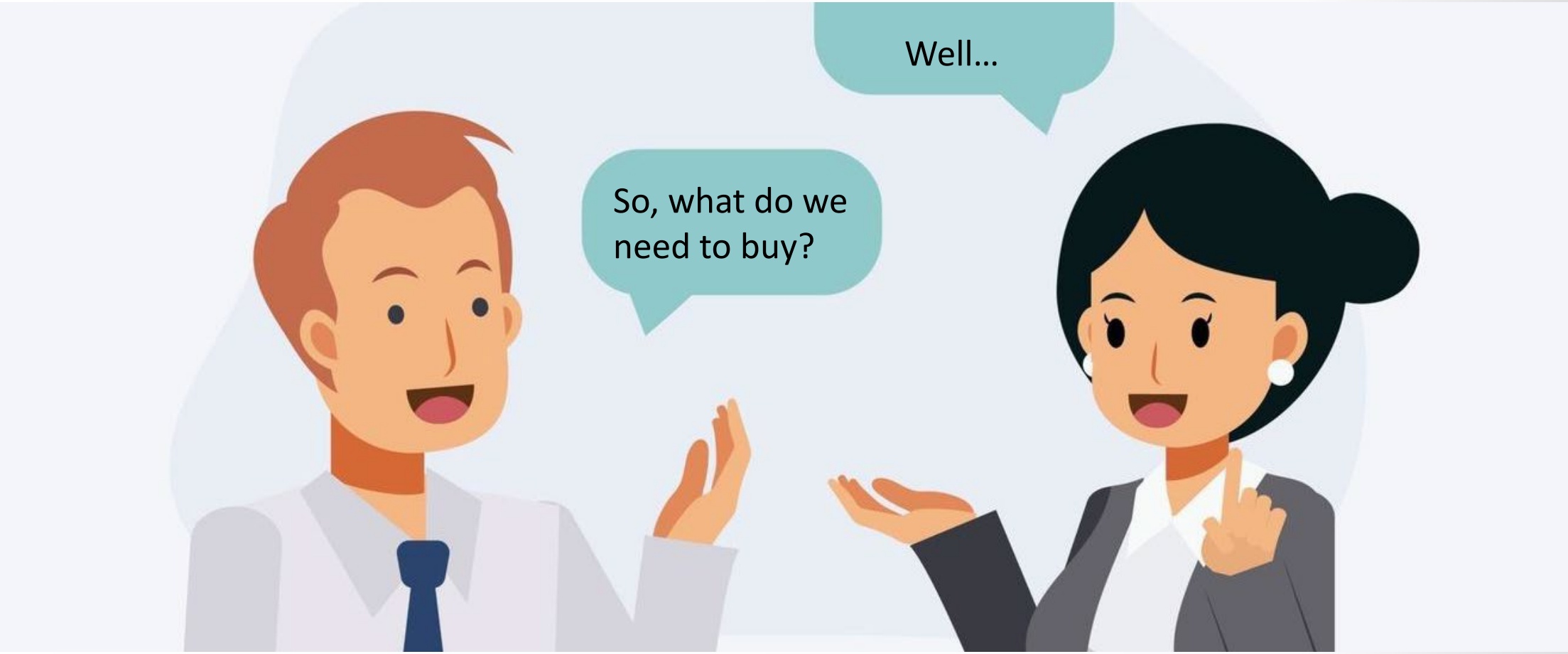
Let’s buy a fancy microscope!

Nikon Eclipse Ti2-E Inverted Microscope

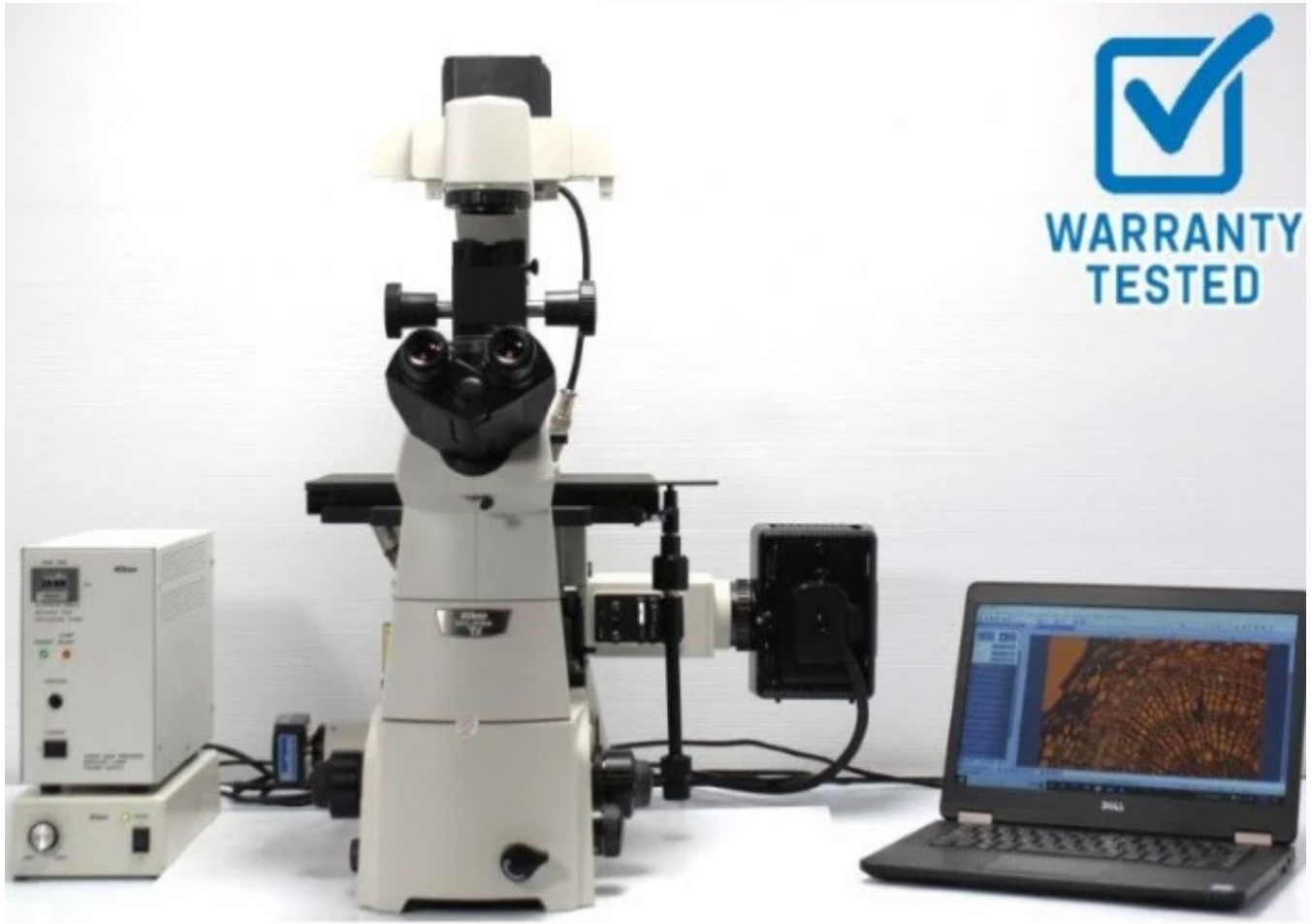
Ooooh, so fancy and *only* $150K

What funds will you be using?

What's all in a Microscope???



Existing Microscope - Trade-in?

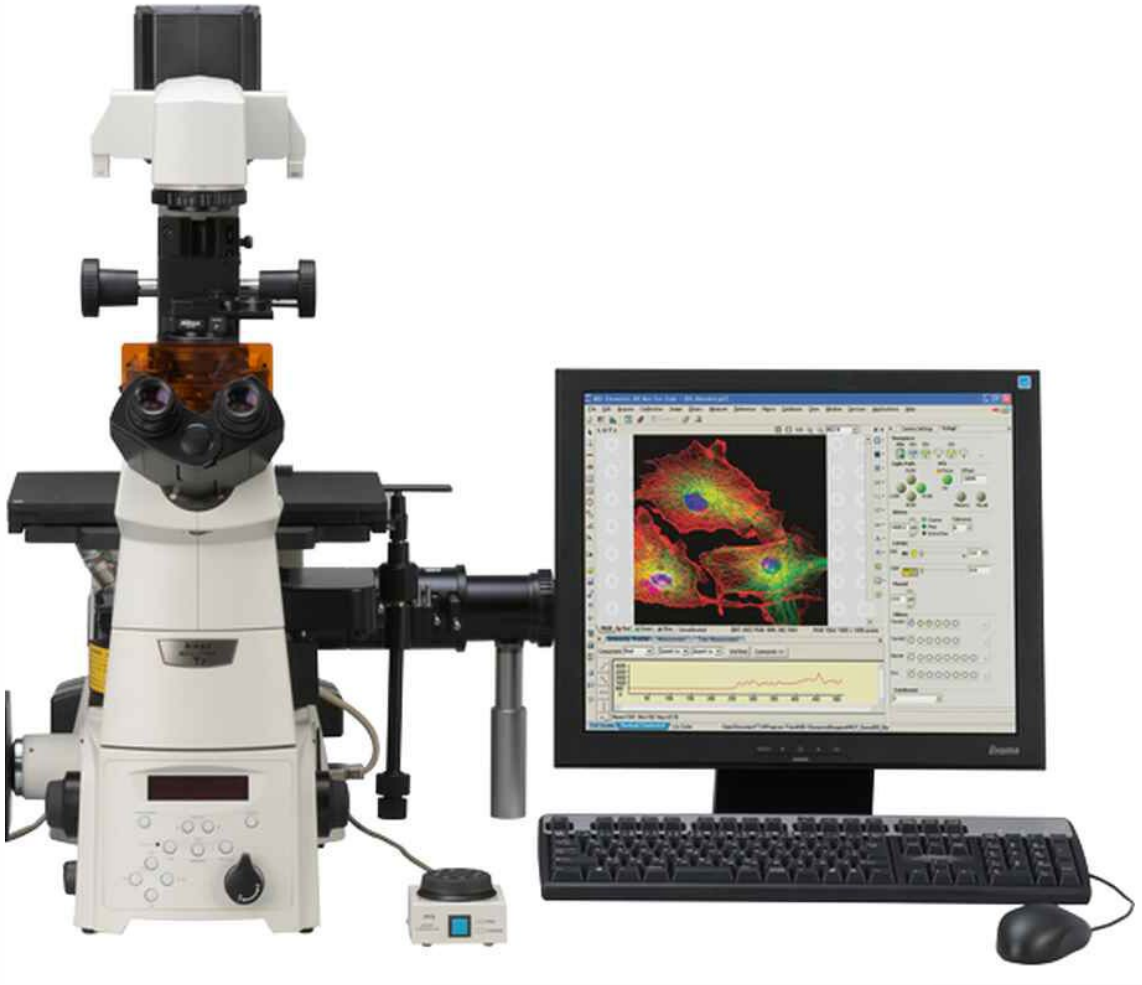


Look at that screen and how small it is. Who uses knobs anymore anyway?

Must…get…new…one…

Value of Trade-in - $9,895

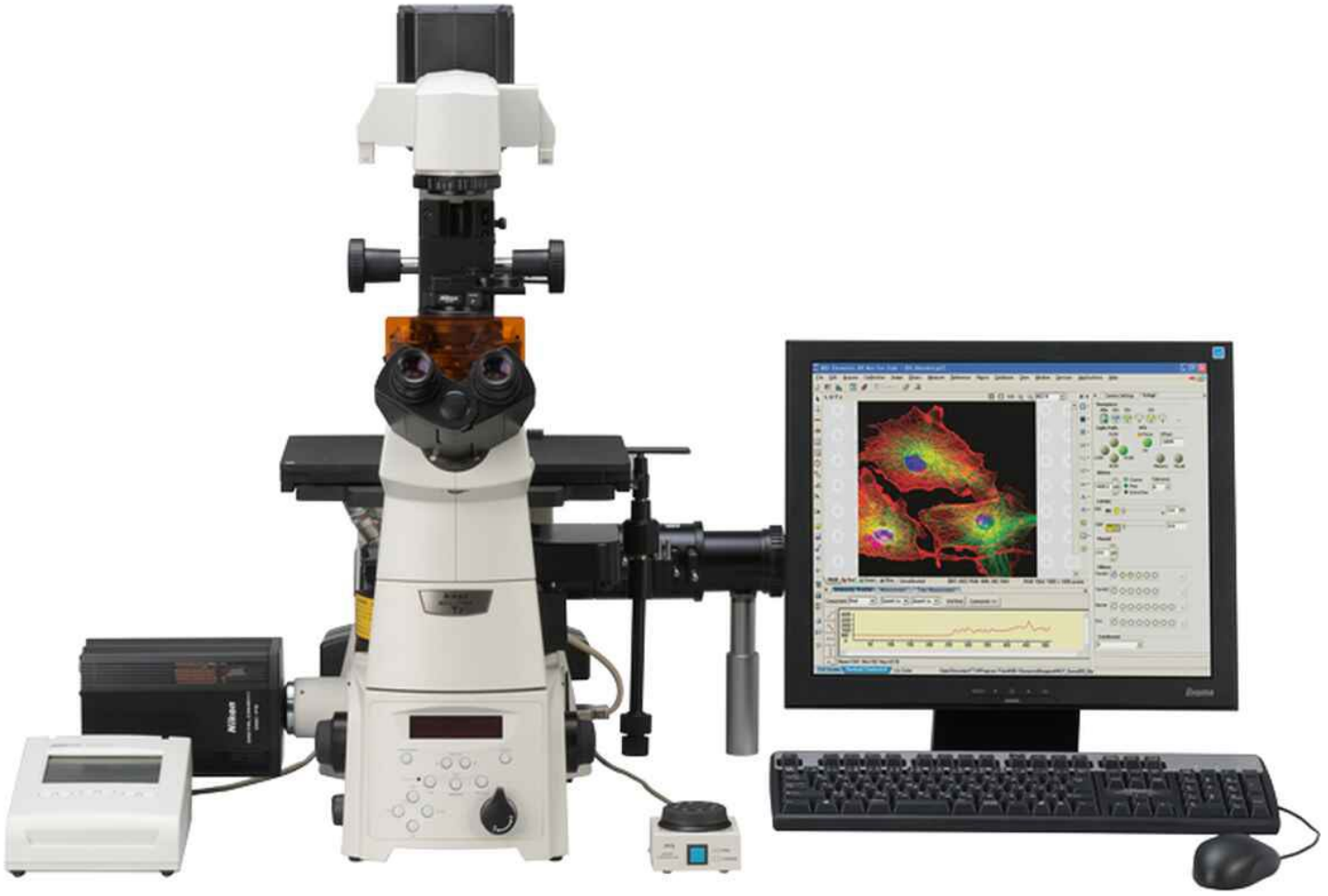
And, we need something to run it…



Computer - $1,500

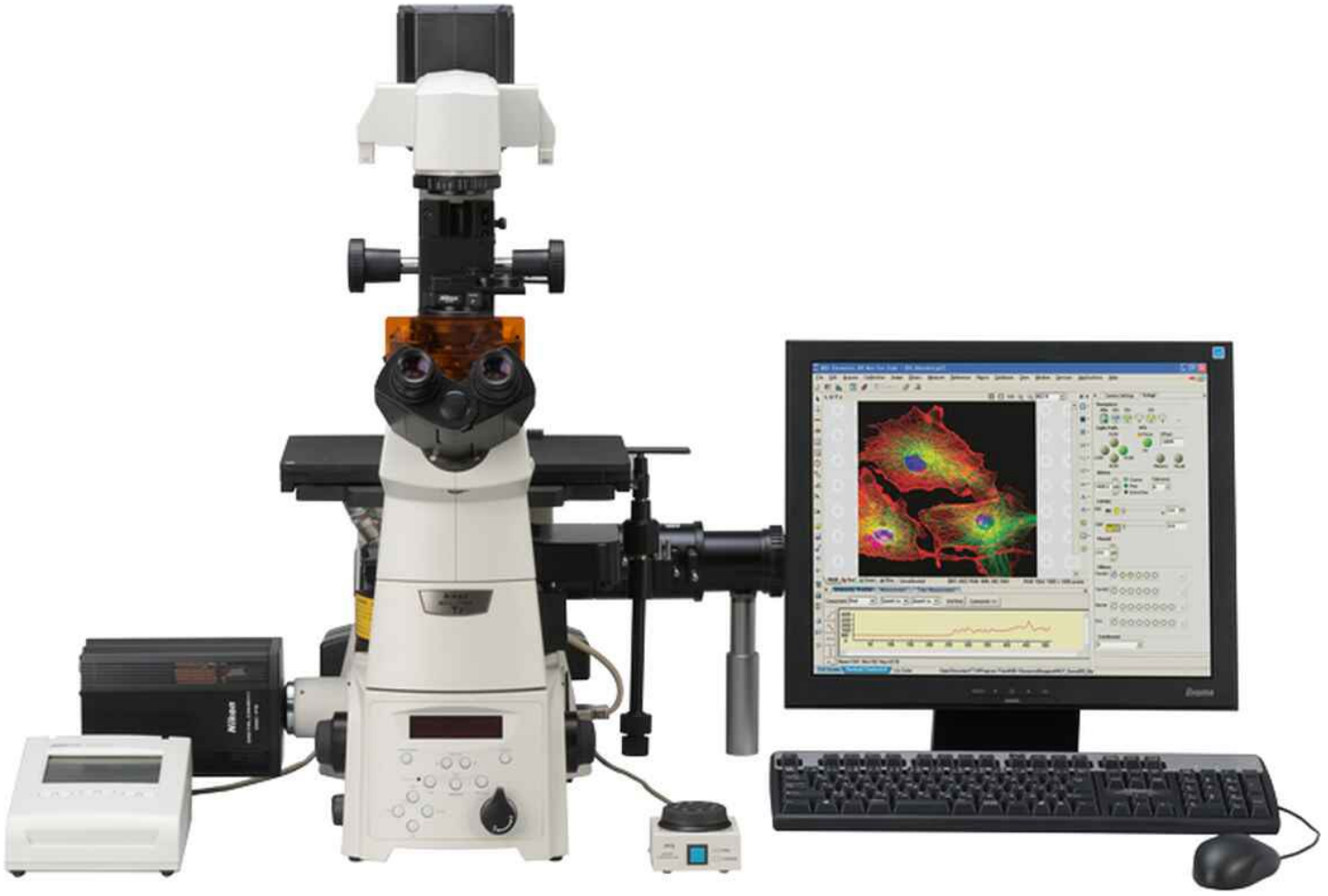
Software - $4,000

Oh, and I need some controllers



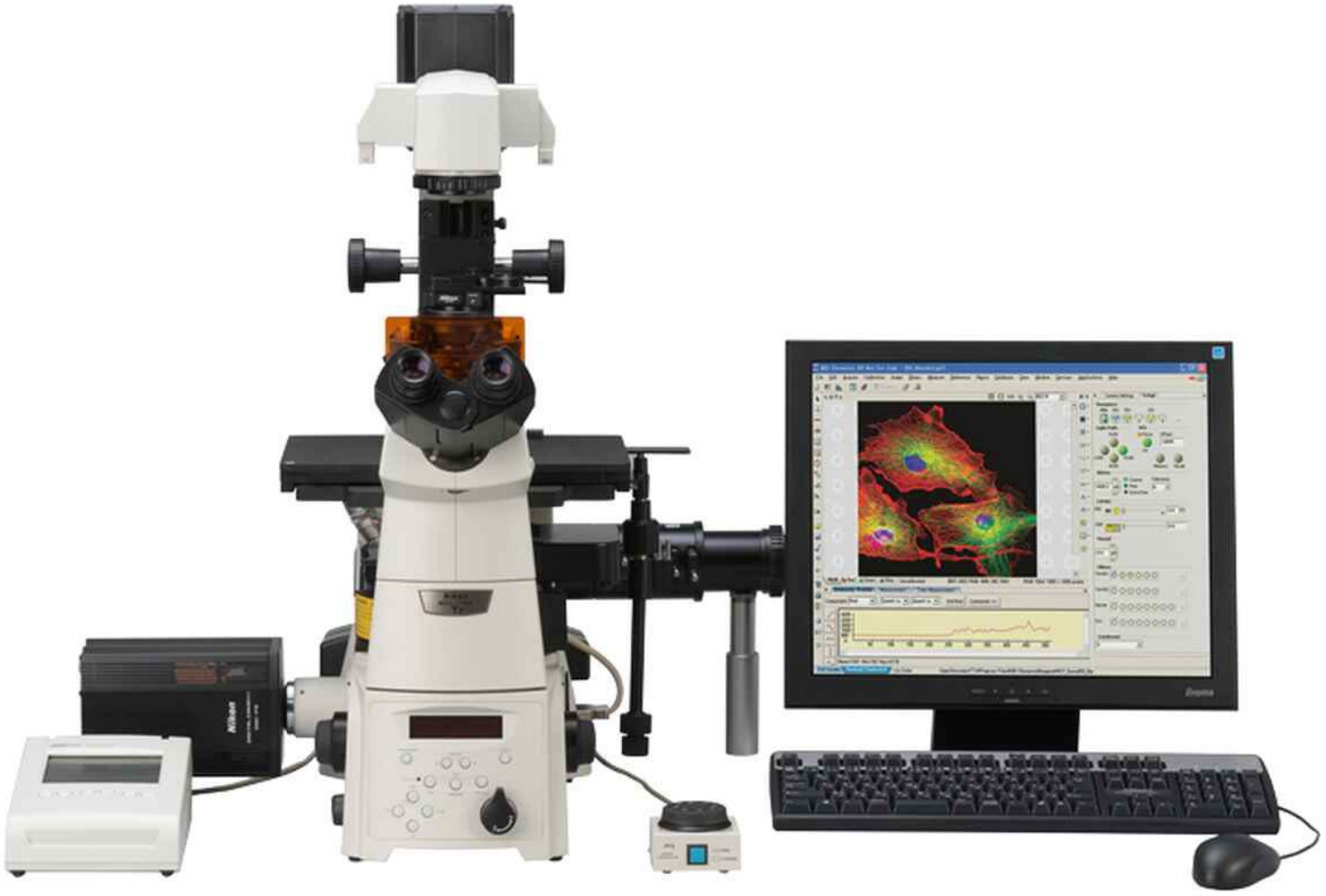
Environmental Controller - $7,000

And it requires installation



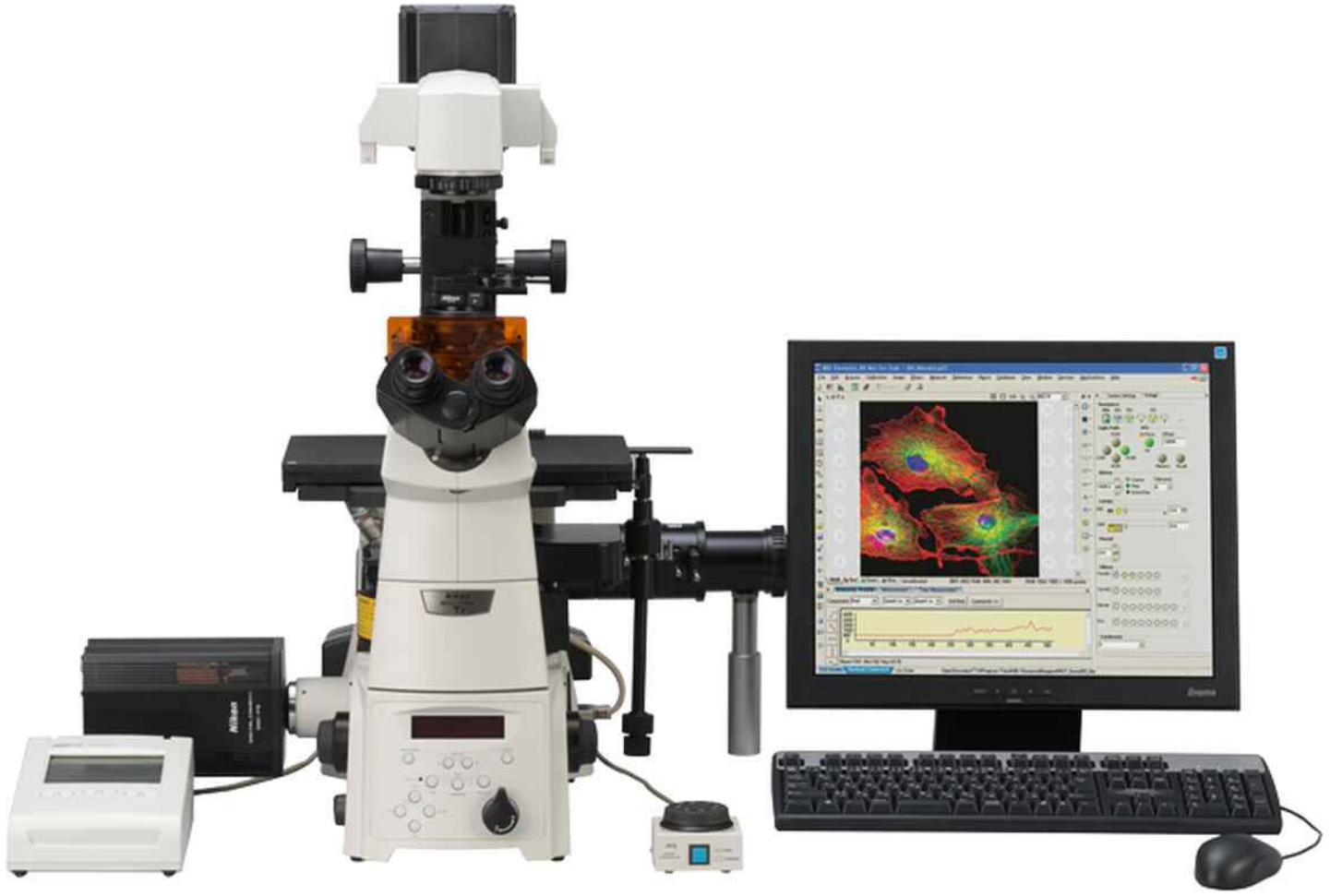
System Installation - $6,200

And training for staff by Nikon



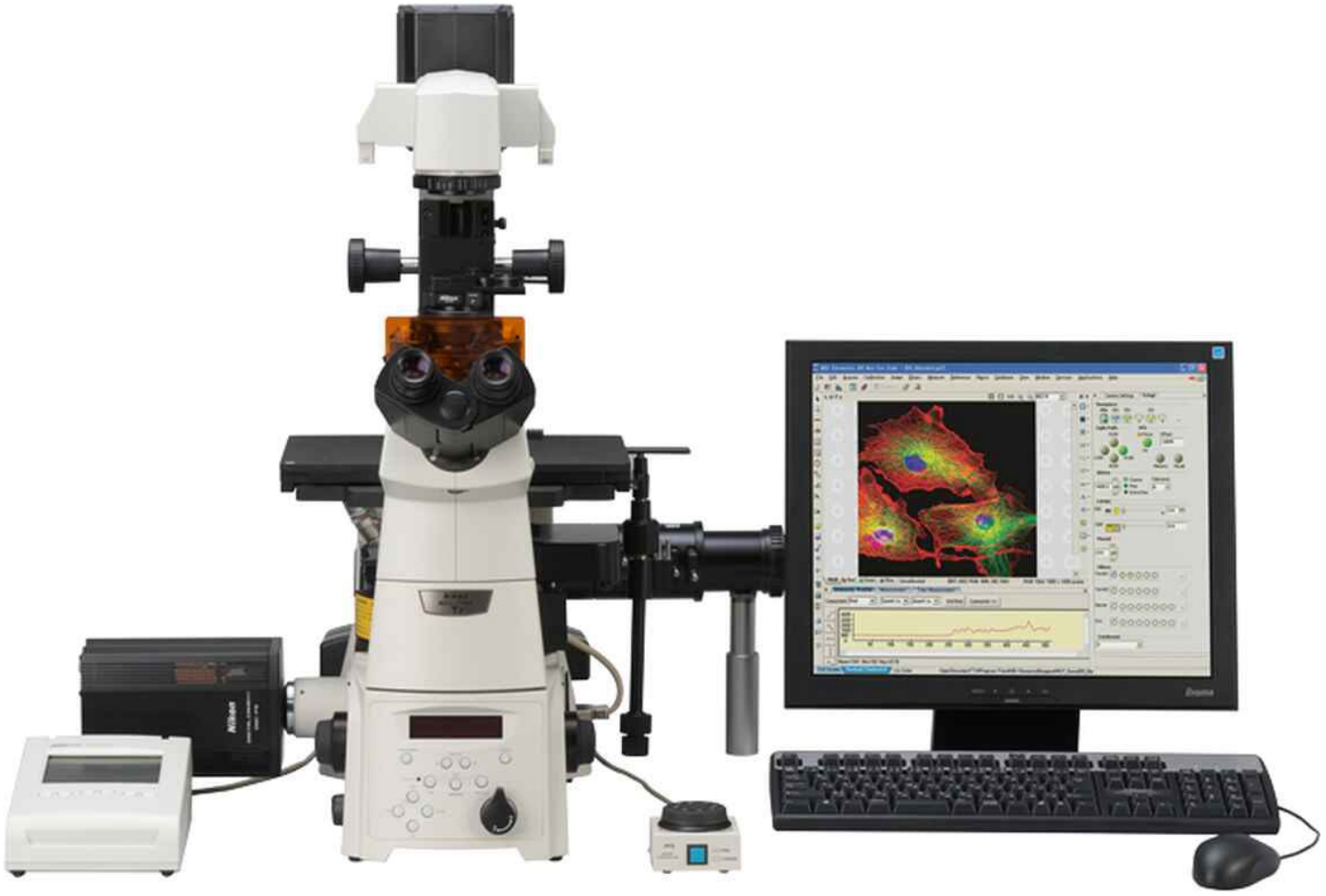
Training Costs - $3,000

And maintenance is required for warranty…



Annual Maintenance - $5,000

Unfortunately, no Prime shipping from Japan…



Shipping Costs - $2,000

Insurance - $1,000

Customs Charges - $2,000

Tariffs????

Okay, okay, how much?

NIKON INSTRUMENTS INC.

1300 Walt Whitman Road - Melville, NY 11747 -
Phone: (631) 547-4012 - Email: niiordersmwr@nikon.net

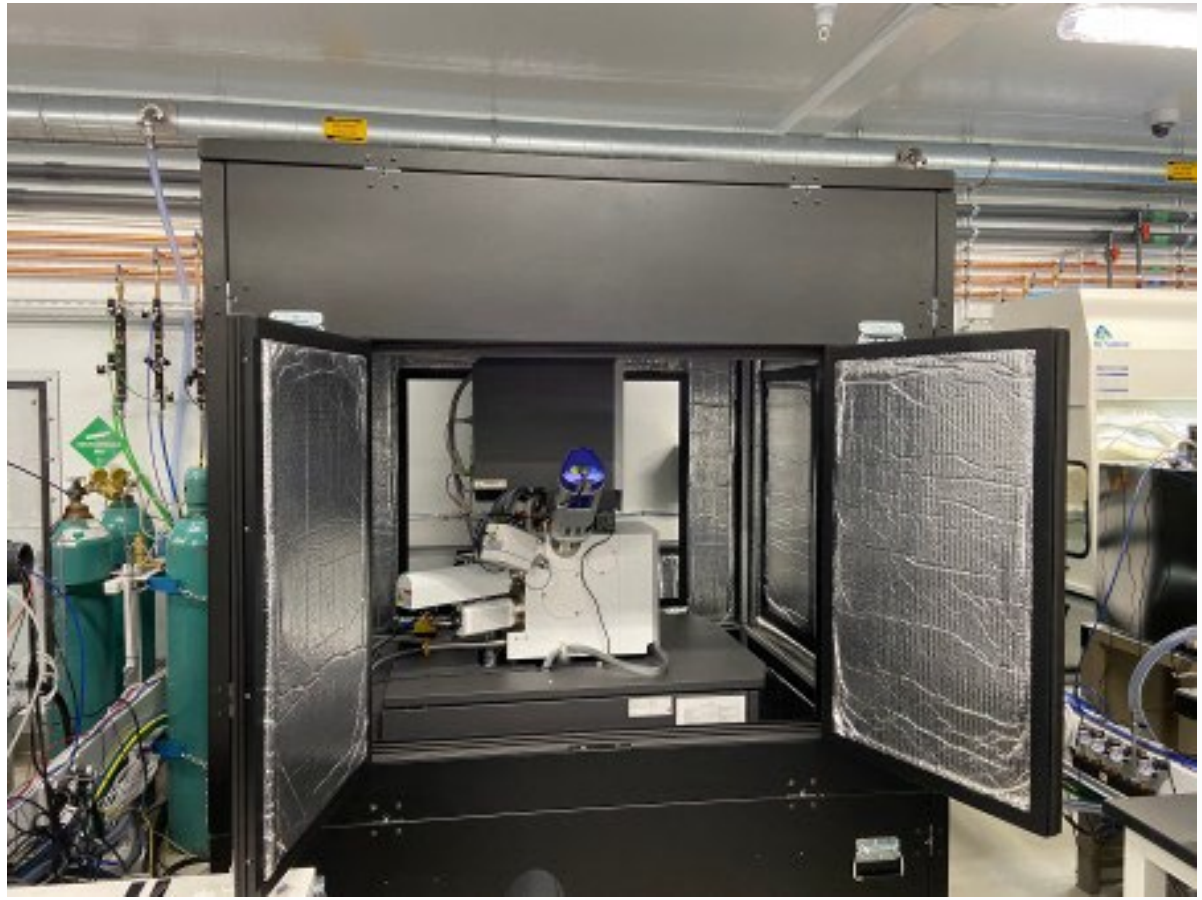
QUOTATION
Date: May, 9, 2022
Quote #: 00168218

- Microscope - $150,000
- Computer - $1,500
- Software - $4,000
- Environmental Controller - $7,000
- System Installation - $6,200
- Training Costs - $3,000
- Shipping, Customs & Insurance - $5,000
- Annual Maintenance (3 yrs) - $15,000
- Trade-in ($9,875)

Total - $181,825

Oh wait….

It has to be in an acoustic enclosure…

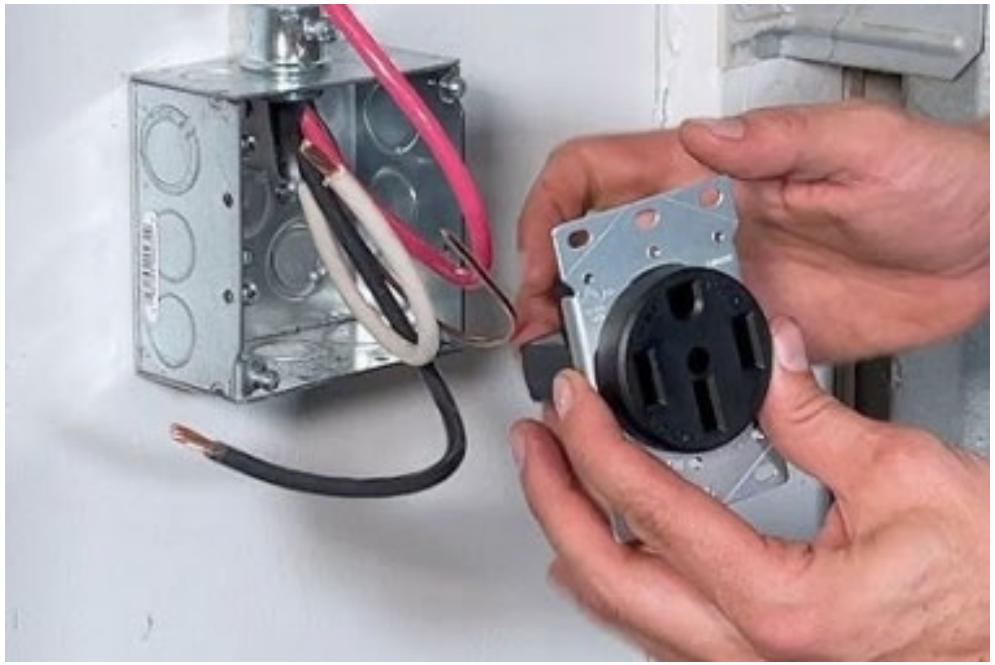


SEM Acoustic Enclosure - $28,200

and the anti vibration table isn't included...

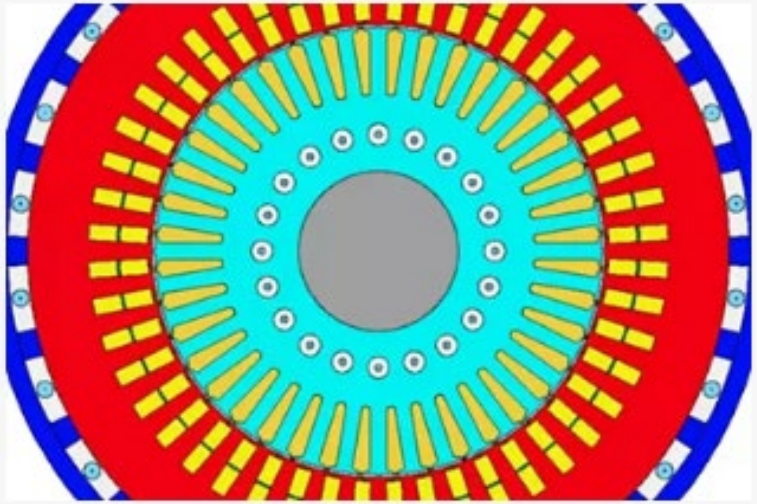
Active vibration isolation table
- $10,625

and we need a new outlet and breaker….



FP&M Costs for new electrical outlet and breaker - $3,500

and my students need software licenses….



Ansys Motor-CAD

ELECTROMECHANICAL DESIGN SOFTWARE

Ansys Motor-CAD is a dedicated electric machine design tool for fast multiphysics simulation across the full torque-speed operating range.

Annual license tokens - $2,000/student

Okay, where are we now?

Nikon System - $181,825

Acoustic Enclosure - $28,200

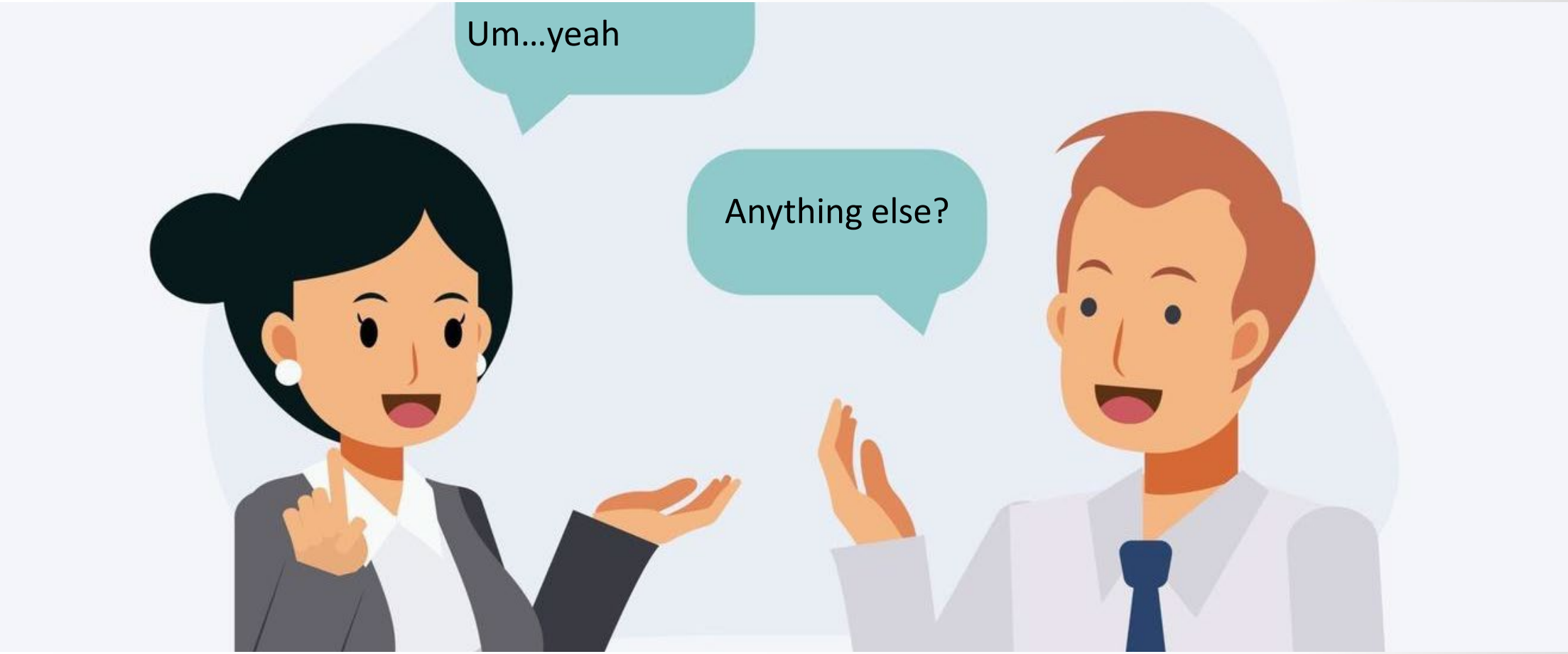
Table - $10,650

FP&M - $3,500

Software Licenses - $18,000

Total = $242,175

Anything else?



We'll need a specialized objective for Aim 5 in year 3

N40XLWD-NIR - 40X Nikon CFI APO LWD NIR Objective, 1

Part Number:	N40XLWD-NIR -Ask a technical question
Package Weight:	0.60 lbs / Each
Available:	Today
RoHS:	RoHS✓
Price:	$18,172.38
Add To Cart:	Qty : 1 Add To Cart

Upgraded Objective - $18,172.38

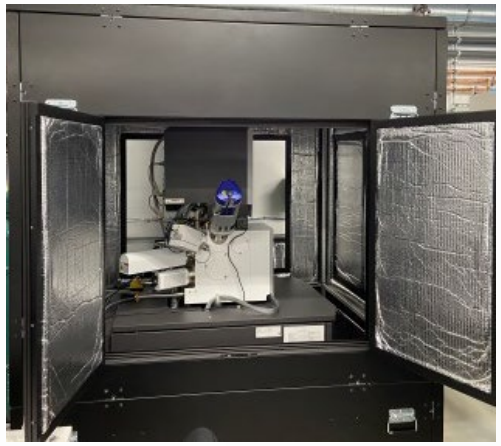
And the reagents, gases, pipets…

Consumables - $5,000/yr???

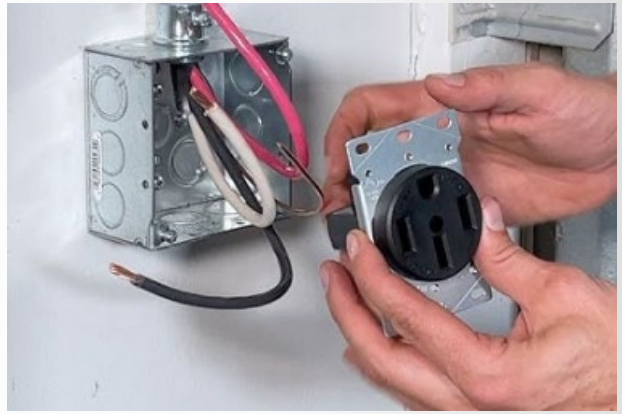
That’s a lot!

I thought we were just buying a microscope…

Nikon System - $181,825



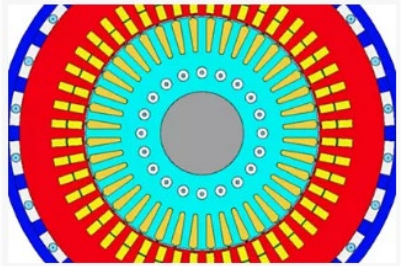
Enclosure - $28,200



FP&M - $3,500

Table - $10,625

Specialized Objective - $18,172.38



Software Licenses - $18,000

Consumables - $15,000

I thought we were just buying a microscope…

$150,000 turned into **$275,000+**

Is this all in the budget for the project?

We budgeted for “a” microscope…

UEI: LCLSJAGTNZQ7 **Enter name of Organization:** The Board of Regents of the University of Wisconsin System

Budget Type: Project **Budget Period:** 1 **Start Date:** 10/01/2024 **End Date:** 09/30/2025

C. Equipment Description

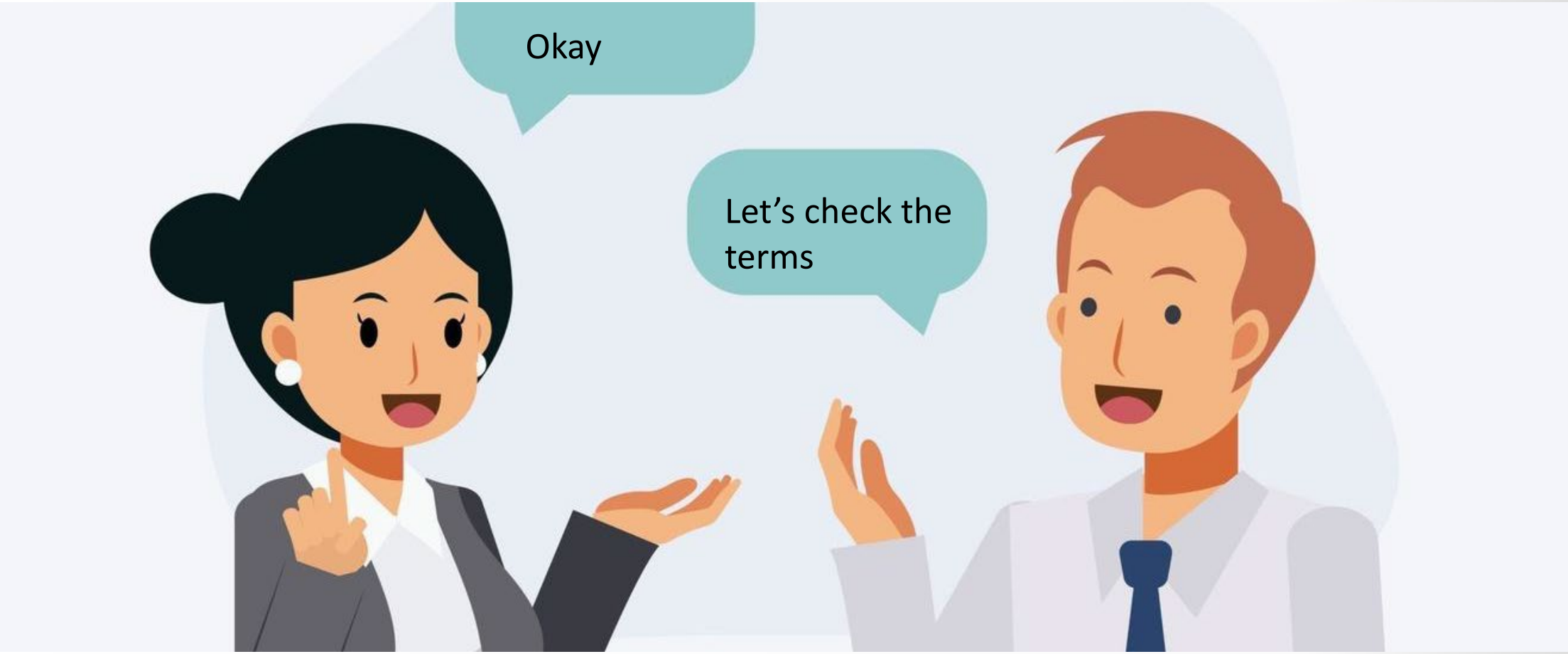
List items and dollar amount for each item exceeding $5,000

	Equipment item	Funds Requested ($)
1.	Furnace Thevamaran	$536,500.00
2.	Visible Wavelenght femtosecond pulsed laser	$284,421.00
3.	v.Weide Thermal Microscope	$197,500.00
4.	Camera, oven, etc	$54,074.00
5.	Linux workstation (two nodes)	$30,603.00
6.		
7.		
8.		
9.		
10.		
	Total funds requested for all equipment listed in the attached file	
	Total Equipment	$1,103,098.00

Additional Equipment:

Is thermal the same as inverted?????????

We need to ensure this is all allowable



What does the budget justification say?

MICROSANJ LLC Technologies is pleased to provide this quotation for your consideration.

This proposal is configured with a EZ510Advanced NanoSecond Capable Thermal Imaging system.
It is offered as a turn-key solution and includes all the components listed and services to get you up and running quickly. We are committed to the success of the project and will provide you with all necessary support to make it an effective tool for your organization.
This system uses the most current technology for High Sensitivity, Spatial Resolution and Transient Speed of 50nS.

Quote Information

ITEM #	Model or Part Number	Description	Price Each
1	EZ510ADVANCED Thermal Imaging System **System is upgradable to fast 50 nano second Transient Thermal Image Capturing Speed**	HIGH RESOLUTION FAST-TRANSIENT DUAL-MODE THERMAL IMAGING SYSTEM * Simultaneous support for up to 3 sensors (2 TR + 1 IR) * Lock-in method with 5 µs transient response * Synchronization modes: Input or Output TTL compatible trigger * SanjVIEW for system management, data acquisition, & data analysis * Integration time 5 µs to 33 ms * Temperature Measurement Range 10 °C to 500 °C * Ambient operating temperature: 10 °C to 35 °C * Height x Width x Depth: 4.25" x 14" x 12" INCLUDES: 4K High Resolution Monitor, Keyboard, & Mouse	
	LS110-VISPK4	VIS BAND LIGHT SOURCE W/4 MANUAL-SELECTABLE λs * 365, 470, 530, & 780 nm * Includes: LLGVISx, Liquid Light Guide for VIS Band	
	EZTR-VIS2	2MP CMOS TR VIS BAND SENSOR: * 1920 x 1200 Pixels, 5.86µm pixel pitch * 365 nm to 800 nm Spectral Range * NETD: 100mK with lock-in & 5 min averaging with Au sample * Resolution: 59nm/pixel @100x * FoV with 5x Objective: 2.25 mm x 1.41 mm * C-Mount interface	
	SMC40-VIS2	SINGLE SENSOR 2MP TR OPTICAL HEAD (VIS2): * 2MP CMOS 1920 x 1200 Pixels, 5.86µm pixel pitch * 365 nm to 800 nm Spectral Range * NETD: 100mK with lock-in & 5 min averaging with Au sample * Resolution: 59nm/pixel @100x * FoV with 5x Objective: 2.25 mm x 1.41 mm * Manual 4-Position turret with M26 Thread	
	OPK-VIS14	General Purpose VIS Band objective package: * 5SVIS36: 5x Mag, 36 mm WD, NA=0.15 * 20SVIS20: 20x Mag, 20 mm WD, NA=0.40 * 100SVIS14: 100x Mag, 14 mm WD, NA=0.52 * Spatial resolution at 100x with 405nm Illumination = 389nm	
	SA-200	SanjANALYZER-PLUS™ Advanced post-data analysis module for SanjVIEW™ * Hyperspectral/Multi-spectral thermoreflectance analysis * Output directly to Matlab file format: xxx.mat * Display & export 3-D visualization * Sub-pixel digital alignment for series & calibration * TransientCAL™: Enhanced region calibration for sub-micron features	
	TEA-TTV	A silicon reference thermal test sample for system performance validation and calibration	
	EZ-CAL50B	PIEZO CALIBRATION TOOL WITH 50W COOLING CAPACITY * Controller for x-y-z Piezo stage & Thermal Stage * Chiller with 50W cooling capacity for thermal stage * EZ-CAL50 x-y-z Piezo stage assembly for auto-positioning & auto-focus with 20 °C to 120 °C Thermal stage, 0.1 °C stability, 50 mm diameter stage area 3-axis 1 nm positioning resolution with 100 x 100 x 100 µm travel range & ±5-degree tip/tilt adjustment	

Lock-in thermal imaging system - $197,500

This system is an essential equipment to record and observe transient temperature changed under microwave radiation at ultra-high spatial and temporal resolution. A lock-in thermal imaging system is indispensable in DE-TBI research for its ability to record and observe transient temperature changes under microwave radiation with ultra-high spatial and temporal resolution. This equipment enables us to precisely track rapid temperature fluctuations within biological tissues when exposed to directed energy pulses. Capturing these detailed thermal dynamics helps to elucidate the mechanisms by which microwave radiation affects neural structures and functions. Such insights are critical for advancing our understanding of TBI and developing protective measures against directed energy exposures. This technology ensures that research in TBI induced by directed energy is grounded in accurate, real-time data regarding thermal effects.

What about the Terms and Conditions?

Can we still buy it????

Section B. Revisions requiring prior approval from the Grants Officer.

1. You must request Grant Officer prior approval from us for any of the following program or budget

   d. The inclusion of direct costs that require prior approval in accordance with the applicable cost principles, as identified in FMS Article III.

      i. The requirement for prior approval of equipment that is to be used primarily in carrying out the project or program supported by the award is waived for equipment with a unit cost of $25,000 or less.

Takeaways from the Example

- Consider all costs
- Determine which will be **capitalized expenses**
- Understand what is allowable
- We need to budget appropriately

Capital Expenses – what are they?

1) Expenditures for the acquisition of **capital assets**

2) Expenditures for additions, improvements, modifications, replacements, rearrangements, reinstallations, renovations, or alterations to **capital assets** that *materially increase their efficiency or functionality* and *useful life*.

What makes something a Capital Asset?

1. **Cost Threshold**
   Must be at least $5,000*

2. **Useful Life**
   Useful life expectancy must be at least 1 year or more

3. **Standalone – Moveable**
   The item cannot be permanently affixed to a building or another object in such a way as to lose its unique identity

*will change to $10,000 whenever UW negotiates new F&A rate

Other costs able to be capitalized

Associated Costs of receiving a capital asset and placing it into service *may* be allowed to be capitalized, including:

- Freight Costs
- In-transit Insurance
- Customs Charges
- Installation and Setup
- Training
- Value received from trade-in of an existing asset

Notes on other costs' account codes

Associated Costs of receiving a capital asset and placing it into service that are capitalized should use the **same account code** as the asset.

Examples:

- Travel to location for training = entire expense report can use single capital expense account code of the Asset training is for

- Freight and customs charges = should use the capital expense account code of the Asset that is being shipped from abroad

Cost Threshold - Information

Cost Threshold at UW is currently* $5,000

1. Must have a per-unit acquisition cost of >= $5,000 or
2. Must have a combined fabricated cost of >= $5,000
   - This means $0.50 bolts could/should be capitalized if part of a fabrication > $5,000

*OMB now lists $10,000 but UW is still following its negotiated F&A rate definitions

Notes about Fabricated Equipment

Fabrications are capitalized **if** they meet the same standards as a capital asset – cost, useful life, moveable.

Fabrications are:

- Custom joined component parts and direct labor creations
- Commercially not available
- All components **must** work together
  - Each part must be necessary for asset to function
- Software can be part of fabrication if it will not function without it

Fabrications receive **one** asset ID

Notes about Child Assets

Child Assets are add-ons to (completed) assets – “Parent”

They must meet the same standards as a capital asset – cost, useful life, moveable.

In our example:

Specialized Objective
- $18,172.38

Costs that Cannot be Capitalized

Consumables

- Even if a single cost is > $5,000 for the consumable
- Even if the items are used with the capitalized equipment
  - Pipets, slides, chemicals, gases, fuels or similar supporting supplies

Immoveable Items

- Items either permanently installed or affixed to a building
  - Sinks, outlets, fume hoods, buried fuel tanks or similar items.

Upgrades, additions and/or modifications < $5,000

- Even if these materially increase an assets value or useful life

Other Costs that Cannot be Capitalized

Associated Costs with Capital Equipment

- Warranties
- Maintenance
- Service Plans
- Replacement Parts
- Spare Parts
- Repair costs

Which expenses are capitalized?

NIKON INSTRUMENTS INC.

1300 Walt Whitman Road - Melville, NY 11747 -
Phone: (631) 547-4012 - Email: niiordersmwr@nikon.net

QUOTATION
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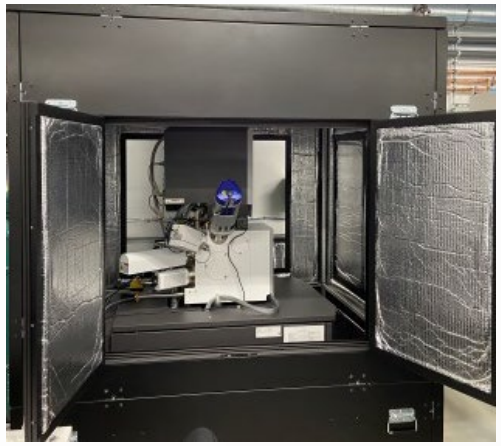
- Microscope - $150,000
- Computer - $1,500
- Software - $4,000
- Environmental Controller - $7,000
- System Installation - $6,200
- Training Costs - $3,000
- Shipping, Customs & Insurance - $5,000
- Annual Maintenance (3 yrs) - $15,000
- Trade-in ($9,875)

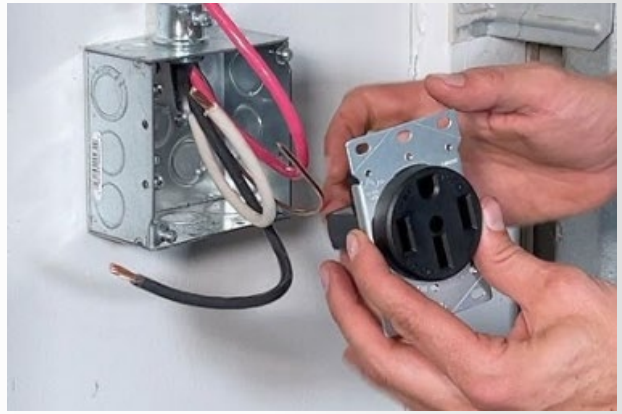
Total - $181,825

Which expenses are capitalized?

Nikon System - $181,825



Enclosure - $28,200



FP&M - $3,500

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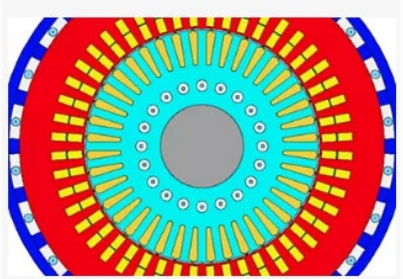
Specialized Objective - $18,172.38



Software Licenses - $18,000

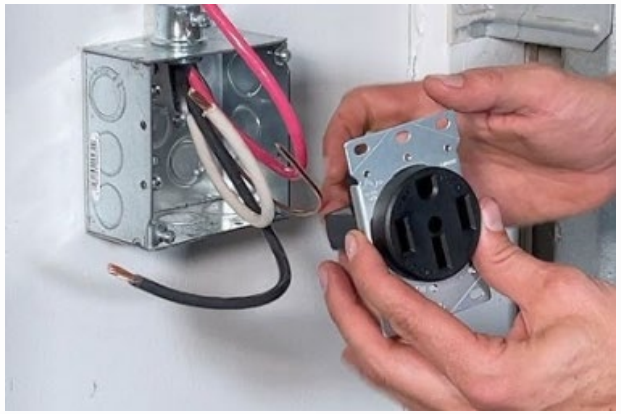
Consumables - $15,000

Capital Expenses in our Scenario

- Equipment – *Microscope, Anti-Vibration Table*
- Trade-in Value of an existing asset – *old microscope*
- Freight, Insurance and Customs Costs
- Installation and Setup
- Training
- Software ???
- Additions >= $5,000 that add value and/or useable life to asset - *lens*

Costs unable to be Capitalized in our Scenario?

- Maintenance Plan
- FP&M Costs
- Consumables



Pre-Award Budgeting Considerations

Communication

- Talk with your PI! Understand the full plan and implications
- Identify any required facility upgrades (get FP&M quotes)
- Explore all peripheral costs

Budget Correctly

- Ensure capital expenses are exempt from F&A
- Provide quotes
- Potentially request extra lines for tariffs and/or inflation

Unallowable Costs

- Identify any costs that are required for the equipment would be unallowable on the grant

Allowable Costs - NOFO

ALLOWABLE DURIP COSTS	UNALLOWABLE DURIP COSTS
Acquisition of major equipment or instrumentation consistent with the evaluation criteria, including: reasonable costs for design, construction, assembly, and/or installation by external contractors or university technicians or engineers.	Construction of modification of buildings, building support systems such as heating, ventilation, or air conditioning, plumbing, or electrical, or fixed equipment such as clean rooms or fume hoods
	Costs for continued operation and maintenance, including extended warranties
	Purely instructional equipment
Computers for DoD-relevant research programs consistent with the evaluation criteria	General purpose computing facilities
Travel costs for testing and/or acceptance of proposed instrumentation, and associated indirect (F&A) costs	Direct salaries of faculty, postdoctoral associates, or students
	Costs that are not allowable under 2 CFR 200 Subpart E – Cost Principles

Terms and Conditions – NO Equipment

ARTICLE 8 – FURNISHED AND ACQUIRED PROPERTY

The University will not furnish any U.S. Government Property for use under this Subcontract. The Subcontractor is not authorized to acquire, fabricate, or provide any tangible personal property items for use under this Subcontract. The Subcontractor must not acquire tangible personal property for use under this Subcontract without the University Procurement Representative's advanced written approval via Subcontract modification. The Subcontractor is required to notify the University prior to purchasing any Subcontractor Acquired Property. The Subcontractor is not required to notify the University for purchases of consumables/supplies (defined as products that are routinely depleted, including supplies such as paper, pens, file folders, toner, ink cartridges, etc.). The Subcontractor assumes the risk of not being reimbursed for property if approvals are not provided by the University in advance via Subcontract modification.

Terms and Conditions – Prior Approval Required

TTR-GTC-0011 PROPERTY

Real Property, Equipment and Supplies

(1) No real property may be acquired under this Assistance Agreement.

(2) Equipment and supplies acquired by the recipient with Federal funds:

Equipment

The recipient shall be accountable for equipment under the award with an acquisition cost per unit of $5,000.00 or more, in accordance with 2 CFR 910.360. The recipient shall not encumber or permit any encumbrance on the equipment without the prior written approval of the DOE Contracting Officer.

Terms and Conditions – Prior Approval Required

3. Any equipment purchases not included in the original award budget must receive DOE approval prior to purchase.

6. **Contractor-Furnished and Subcontractor-Acquired Property**

6.1. Equipment is not approved for purchase under this Contract. Purchase of equipment or other tangible personal property, which is not identified in the Subcontractor's cost proposal for this Contract and for which the Subcontractor is entitled to be reimbursed as a direct item of cost under this Contract, shall be approved in advance in writing by Contractor's Contract Specialist.

Terms and Conditions - Other

i. The requirement for prior approval of equipment that is to be used primarily in carrying out the project or program supported by the award is waived for equipment with a unit cost of $25,000 or less.

b. Equipment

Post-Award equipment purchases with a total acquisition cost of $250,000 or greater may be purchased only with the prior approval of the Contracting Officer.

Terms and Conditions – Buy America

FA-TC-0020 - NOTICE REGARDING THE PURCHASE OF AMERICAN-MADE EQUIPMENT AND PRODUCTS – SENSE OF CONGRESS

It is the sense of the Congress that, to the greatest extent practicable, all equipment and products purchased with funds made available under this award should be American-made.

Titling - Considerations

- Sponsor Conditions
  - Sponsor may allow title to rest with UW, but equipment only be used on sponsored projects funded by that sponsor
- Trade in Restrictions

Disposition

Term 19. Equipment

Subject to the conditions provided in 2 CFR 200.313, title to equipment (property) acquired under a Federal award will conditionally vest upon acquisition with the non-Federal entity. The non-Federal entity cannot encumber this property and must follow the requirements of 2 CFR 200.313 before disposing of the property.

A state must use equipment acquired under a Federal award by the state in accordance with state laws and procedures.

Equipment must be used by the non-Federal entity in the program or project for which it was acquired as long as it is needed, whether or not the project or program continues to be supported by the Federal award. When no longer needed for the originally authorized purpose, the equipment may be used by programs supported by DOE in the priority order specified in 2 CFR 200.313(c)(1)(i) and (ii).

Management requirements, including inventory and control systems, for equipment are provided in 2 CFR 200.313(d).

When equipment acquired under a Federal award is no longer needed, the non-Federal entity must obtain disposition instructions from DOE or pass-through entity.

Disposition will be made as follows: (1) items of equipment with a current fair market value of $5,000 or less may be retained, sold, or otherwise disposed of with no further obligation to DOE; (2) Non-Federal entity may retain title or sell the equipment after compensating DOE as described in 2 CFR 200.313(e)(2); or (3) transfer title to DOE or to an eligible third party as specified in 2 CFR 200.313(e)(3).

See 2 CFR 200.313 for additional requirements pertaining to equipment acquired under a Federal award. Also see 2 CFR 910.360 for additional requirements for equipment for For-Profit recipients. See also 2 CFR 200.439 Equipment and other capital expenditures.

Questions

Resources – UW Business Services

Capital Equipment

https://businessservices.wisc.edu/accounting/capital-equipment/

Definitions

https://businessservices.wisc.edu/wp-content/uploads/sites/546/2018/11/Capital-Equipment-Definitions.pdf

Policy – Capital Equipment

https://policy.wisc.edu/library/UW-3008

Procedure – Fabricated Capital Equipment

https://businessservices.wisc.edu/documents/3008-4-fabricated-capital-equipment-procedure/

Procedure – Upgrades to Existing Capital Equipment

https://businessservices.wisc.edu/documents/3008-5-upgrades-to-existing-capital-equipment-procedure/