emailed 12/10/18

Student Technology Fee

Grant Proposal

2018.016

FY 2018-19

Ron Wright

Comment: Large Request that was funded once in the past Recommend 50% funding with match from other sources.

Tracy Brown (TB)

Comment: Network will need to be verified.

Shawn Parr (SP)

Comment:

Chris Parish

Comment: (CP)

Heath Fitts

Comment: Does the room have adequate network resources for the new PCs?

PF #16
25000

Northwestern State University
Request for Student Technology Fee Project Funds
Project Summary and Signature Form

Title of Project: The Addition of Physiological Study Capability to an Anatomy Laboratory

Department / Organization: Biology, Microbiology, & Veterinary Technology

Project Contact(s): Dr. Wanda Goleman

What is the expected number of students this project will serve the first year: This equipment will serve approximately 400 students in the first year of service

Summary of Project (DO NOT EXCEED 250 WORDS)
(The following items should be included in your summary: A general overview of the program along with how it will be implemented, a description of the population that this project will serve now and in the future, the direct benefits students will receive from this project, how this program will improve the service currently provided to our students, and any negative aspects that may result if this program is not funded.)

Our goal is to purchase 8 computers and 8 Biopac Advanced Student Laboratory systems to promote the ability of students to collect and analyze actual physiological data. The classroom used for teaching anatomy and physiology laboratory courses Biol 2251-2261 is lacking in the equipment to adequately teach physiology. The Biopac system is an integrated life science teaching solution that includes hardware, software, and curriculum materials that students use to record data from their own bodies. The system includes over 30 lessons that we plan to use to train students, primarily Pre-Nursing & Allied Health majors and Exercise Physiology majors, in performing and analyzing physiological procedures such as electrocardiograms, electromyography, pulmonary function studies, nervous physiology, etc. To attain a real understanding of physiological mechanisms requires a hands-on approach. Using the Biopac data collection and analysis system will provide students with this experience, as well as a greater understanding of science and research methods used in the medical field. This equipment will provide a more creative and interesting learning environment for approximately 400 students each year. The cost of this equipment over the next five years will be approximately $20 per student ($41760.64/2000 students/5 years).

While this department does have laboratory fees are available, the total cost of $41760.64 for the purchase of the Biopac systems and computers from laboratory fees is prohibitive and would reduce funds needed for maintaining operation of this and other laboratories.

Signature of Project Contact: Wanda L. Goleman Date: 10/26/18

Signature of Department Head: Date: 10-26-18

Signature of Appropriate Dean: Date: 10/26/18

Northwestern State University
Request for Student Technology Fee Project Funds

Requested equipment will be located/installed/housed in: Building: Bienvenu Hall Room: 217
Does the department requesting funding charge lab fees? **YES**/ NO
Are departmental property control policies and procedures in place for requested equipment? **YES**/ NO
Who will be responsible for property control of the requested equipment and how will you secure and monitor access to moveable equipment? Dr. Wanda Goleman, Coordinator of Nursing Service Courses, and Dr. Francene Lemoine, Director of Biological & Physical Sciences, will be responsible for control of purchased equipment and software. Each unit will be stored and used in the secured laboratory that is open to students only when an instructor is present.
List those individuals who will be responsible for the implementation of the project and describe their demonstrated abilities to accomplish the outlined objectives. Dr. Wanda Goleman, Coordinator of Nursing Service Courses, will be responsible for implementation of this project. Dr. Goleman has worked with physiology data collection systems for many years.
List any personnel (technical or otherwise) required to support the project/initiative. As this equipment will be purchased with Student Technology monies, this department will be asked to install the required Biopac software on the computers.
Provide a timeline for implementation. The Biopac systems will be available for use beginning in the Fall 2019 semester. Students will be evaluated for increased understanding of physiology mechanisms through weekly quizzes and midterm exams.
Estimate the expected life of any requested hardware and software. Explain any anticipated equipment/software upgrades over the next five years. Based on the performance of the Biopac systems previously purchased, life expectancy of this equipment should be approximately fifteen years, with "...free technical support is provided by phone, email and screen sharing." BIOPAC Systems, Inc. guarantees its equipment against all defects in materials and workmanship to the original purchaser for a period of 12 months from the date of shipment unless otherwise stated below; effective 1-1-2015, BIOPAC MP36 and MP36R units are guaranteed against defects in materials and workmanship to the original purchaser for a period of 60 months (5 years) from the date of shipment. Additionally, small software upgrades are free, while large upgrades, if needed, will be discounted.

Northwestern State University
Request for Student Technology Fee Project Funds
Budget Summary

Title of Proposal: The Addition of Physiological Study Capability to an Anatomy Laboratory

College / Department / Organization: COAS/Biology, Microbiology, & Veterinary Technology

Project Contact(s): Dr. Wanda Goleman

I. PROPOSED BUDGET:

	Student Tech Fee Money Requested	Funding from other Sources	Project Total
A. Equipment	9371.28		9371.28
B. Software	31960.00		31960.00
C. Supplies			
D. Shipping/Handling	160.00		160.00
E. Installation			
F. Other Expenses (Identify)			
1.			
2.			
3.			
4.			
5.			
G. Total Costs (A through F)	41760.64		41760.64

Detailed Budget Request **Page: 1**

Item: OptiPlex 7450 All-in-One - Build your own
Qty: 8 Price/each: 1,802.17 Total Price: 9371.28
Is there a recurring cost associated with this item? No If so, how much? _____

Item: BSL Advanced System, Windows
Qty: 8 Price/each: 3,995.00 Total Price: 28,924.00
Is there a recurring cost associated with this item? No If so, how much? _____

Item:
Qty: _____ Price/each: _____ Total Price: _____
Is there a recurring cost associated with this item? _____ If so, how much? _____

Item:
Qty: _____ Price/each: _____ Total Price: _____
Is there a recurring cost associated with this item? _____ If so, how much? _____

Item:
Qty: _____ Price/each: _____ Total Price: _____
Is there a recurring cost associated with this item? _____ If so, how much? _____

Duplicate this page as necessary

NORTHWESTERN STATE
School of Biological and Physical Sciences

MEMORANDUM

Date: 10-24-18

From: Francene J Lemoine Francene J Lemoine

To: Student Government Association – Student Technology Fee Committee

Re: Support for Dr. Goleman's grant application

Dear Colleagues,

It is my pleasure to write this letter in support of the student technology fee grant submitted by Dr. Wanda Goleman on behalf of the School of Biological and Physical Sciences. This grant will allow for the purchase of eight new desktop computers and eight new Biopac Advanced System software and transducer packages for use in our human anatomy and physiology laboratory - Bienvenu Hall Room 217. This laboratory classroom is heavily used to teach BIOL2251 (Human Anatomy and Physiology I Laboratory for Nursing and Allied Health Majors) during the fall semesters and BIOL2261 (Human Anatomy and Physiology II Laboratory for Nursing and Allied Health Majors) during the spring semesters. Each semester, approximately 400 students are enrolled in these courses. With the acquisition of the requested equipment, we will be able to provide hands-on experiential learning opportunities to these students while they collect and analyze non-invasive physiologic data. Your support will allow us to create valuable experiences for these future healthcare professionals. The School of Biological and Physical Sciences has been generously supported by you in the past, and we do not take the faith that you have in us lightly. With this new proposal, we hope to continue that relationship and show you the value that we can add to our students' educational experience with your support.

If you have any questions, please do not hesitate to contact me.

Phone: 318-357-5323 | Fax: 318-357-4518 | 112 Bienvenu Hall | Natchitoches, LA 71497

NORTHWESTERN STATE
COLLEGE OF ARTS AND SCIENCES

October 23, 2018

Ms. Jennifer Long

Student Technology Fee Office

Watson Library

Dear Committee Members,

It is with pleasure that I write in support of a grant submitted by Dr. Wanda Goleman to furnish Bienvenu 217 with the Biopac Advanced Physiology systems and the computers needed to run this software.

As I am sure you know, the Department of Biology, Microbiology, and Veterinary Technology serves a large number of nursing and allied health students. Some of the highest enrollment courses are Anatomy and Physiology Labs I and II (BIOL2251 and 2261). We currently average approximately 22 sections with 32 students each of these courses each year. The purchase of this equipment provides a significant increase in our ability to prepare these students for the next step in their education. Based on this department's previous experience working with Biopac systems, I assure you that the equipment will see extensive use and benefit a very large number of students for many years to come.

Sincerely,

Greg A. Handel
Dean, College of Arts and Sciences

BIOPAC Systems, Inc.
42 Aero Camino
Goleta, CA 93117
USA
805-685-0066

Fax: (805) 685-0067
Fed. Tax ID: 77-0256290

QUOTE

PRO-FORMA INVOICE

SALES ORDER #: 0090939
ORDER DATE: 10/17/2018
CUSTOMER NUMBER: NUL2781
SALESPERSON: Steven Matsumura

SOLD TO:
Northwestern State University
Dept of Biological Sciences
Watson Library Room 113C
Sciences
Nachitoches, LA 71497

SHIP TO:
Northwestern State University
Dept of Biological Sciences
Watson Library Room 113C
Attn: Alfred Ehlers
Nachitoches, LA 71497

Customer P.O.	Ship VIA	Terms	Quote Expire Date
	UPS GROUND	Net 30	11/17/2018

Ordered	Item Number			Price	Amount
8.00	**BSLADV-W**	0.00	0.00	$3,995.00	$31,960.00
	BSL Advanced System, Windows				
	http://www.biopac.com/biopac-student-lab-advanced-teaching-system-windows				

Net Order:	$31,960.00
Less Discount:	$3,196.00
Freight:	$160.00
Order Total:	$28,924.00

BIOPAC Systems accepts open purchase orders from U.S. universities and corporations. All others must pay by direct transfer of funds to BIOPAC Systems, Inc.'s bank account, check (must clear prior to shipment), or by MasterCard/VISA/Discover/American Express. All funds in U.S. currency. Please note that custom items cannot be returned for exchange or refund.

Pacific Premier Bank (Short: PACIFIC PREMIER BK)
17901 Von Karman Ave., Ste 1200, Irvine CA 92614
Account Name: BIOPAC Systems, Inc.

Bank routing number: 322285781
Bank account number: 8000011577
SWIFT code: PPBI US 66

DUNS #: 363079641

Authorized by: _____

Accepted by: _____ Date: _____

42 Aero Camino, Goleta, CA 93117
Tel (805) 685-0066 | Fax (805) 685-0067
info@biopac.com | **www.biopac.com**

QUALITY POLICY

BIOPAC Systems, Inc., will continuously improve its products to better satisfy the needs of its customers and will deliver to them, on time and every time, defect-free products and services.

ISO 9001:2015 COMPLIANCE

The quality management system of BIOPAC Systems, Inc. has been assessed by NSF-ISR and found to be in conformance to the following standard(s): ISO 9001:2015.
Scope of Registration: Design and manufacture of educational and research computerized recording data and analysis systems including transducers, electrodes, amplifiers, recording accessories, software and curriculum materials for life science research communities such as universities, hospital facilities, pharmaceutical companies and research institutes.

INTENDED USAGE

BIOPAC Systems, Inc., instruments, components, and accessories are designed for educational- and research-oriented life science applications and investigations. BIOPAC Systems, Inc., does not condone the use of its instruments for clinical medical applications. Instruments, components, and accessories provided by BIOPAC Systems, Inc., are not intended for the diagnosis, cure, mitigation, treatment, or prevention of disease.

REQUIREMENTS

The instruments, sensors, transducers, software and associated equipment are designed to meet the measurement and analysis requirements for most users. Modification may be appropriate to help a user achieve specific types of output. BIOPAC offers factory installed enhancements or modifications for such needs. **WE ENCOURAGE ALL USERS TO CAREFULLY CONSIDER THEIR DATA REQUIREMENTS AND WHETHER MODIFICATIONS MAY BE REQUIRED, AND TO CONSULT WITH OUR KNOWLEDGEABLE CUSTOMER SERVICE STAFF.** We also suggest an initial pilot test of our equipment for any research project, to help identify modification needs. Our Limited Warranty describes our responsibility should you deem our product to be unsuitable for your needs.

TECHNICAL SPECIFICATIONS

All technical specifications are subject to change without notice. Find specifications on product web pages and/or in the associated hardware guide(s).

PRICING

All catalog prices are ex-factory Santa Barbara, California, USA and do not include shipping or handling charges. These will be prepaid and added to the invoice. We ship via United Parcel Service (UPS). Sales tax will be added to orders where applicable unless a copy of the tax exemption number is submitted with the order. Prices are subject to change without notice.

QUOTATIONS

We are happy to provide written quotations. If requested, we will include estimated shipping charges with the quotation.

42 Aero Camino, Goleta, CA 93117
Tel (805) 685-0066 | Fax (805) 685-0067
info@biopac.com | **www.biopac.com**

PRIVACY POLICY

BIOPAC's privacy policy is available on the company website BIOPAC.COM as a link in the footer or directly via https://www.biopac.com/privacy-policy/

PLACING AN ORDER

Call, email or fax BIOPAC (8 a.m.-5 p.m. Pacific Time), or contact your local representative. Please include the following information or have it ready when you call:

1. Complete billing & shipping addresses;
2. Name and department of the end user;
3. Description of items you wish to order;
4. Telephone number, in case we have any questions;
5. Purchase order number (if applicable).

   Note A copy of your purchase order is required when you place an order, unless you are placing a credit card or web order.

TERMS

Open accounts are extended to all recognized educational or research institutions, hospitals and businesses. Terms are net 30 from the date of shipment. Students, individuals and private companies may call for a credit application, enclose payment with order, charge with VISA, MasterCard, American Express, Discover, or pay C.O.D.

EXPORTS

If ordering equipment intended for overseas delivery, please specify whether you require a USA or EURO power cord. International payment should be made in advance by VISA, MasterCard, American Express, Discover or wire transfer of funds to BIOPAC's bank account, or confirmed irrevocable letter of credit (all banking charges and fees must be applied to the buyer's account). The validity period of letters of credit should be at least 90 days. All funds shall be in U.S. dollars.

Orders paid by direct transfer of funds or by credit card can be shipped via air express, standard air freight, or air mail (some size restrictions may apply to air mail shipments). Orders placed with a letter of credit will be shipped via standard air freight.

List prices do not include freight, shipping, handling or insurance. In addition, prices for overseas shipment will be slightly higher than domestic prices. Please contact us for a pro forma quotation to include shipping and any additional costs before placing an order.

LIMITED WARRANTY

BIOPAC Systems, Inc. guarantees its equipment against all defects in materials and workmanship to the original purchaser for a period of 12 months from the date of shipment unless otherwise stated below; effective 1-1-2015, BIOPAC MP36 units are guaranteed against defects in materials and workmanship to the original purchaser for a period of 60 months (5 years) from the date of shipment.

If BIOPAC Systems, Inc. receives notice of such defects during the warranty period, BIOPAC Systems, Inc. will at its option, either repair or replace the hardware products that prove to be defective in materials or workmanship. This warranty applies only if your BIOPAC Systems, Inc. product fails to function properly under normal use and within the manufacturer's specifications. This warranty does not apply if, in the sole opinion of BIOPAC Systems, Inc., your BIOPAC Systems, Inc. product has been damaged by alteration, accident, abuse, misuse, neglect, improper packing, shipping, modification or servicing, by any party other than BIOPAC Systems, Inc. If a problem arises, please contact us for authorization before returning an item.

42 Aero Camino, Goleta, CA 93117
Tel (805) 685-0066 | Fax (805) 685-0067
info@biopac.com | **www.biopac.com**

Any returns should be supported by a Return Mail Authorization (RMA) number issued by BIOPAC Systems, Inc. BIOPAC Systems, Inc. reserves the right to refuse to accept delivery of any shipment containing any shipping carton which does not have the RMA number(s) displayed on the outside. The Buyer will prepay transportation charges to the BIOPAC Systems, Inc. designated site. The warranty period for repairs and for used equipment purchased from BIOPAC is 90 days.
BIOPAC Systems, Inc. makes no other warranty or representation, either expressed or implied, with respect to any hardware or software product, its quality, performance, merchantability, or fitness for a particular purpose.
BIOPAC Systems, Inc. will not be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect in a hardware or software product or its documentation, even if advised of the possibility of such damages, or for damage of any equipment connected to a BIOPAC Systems, Inc. product.

SERVICE

BIOPAC ships high-quality, durable equipment, but it's possible that a system may need servicing. Before returning it, please call BIOPAC for return authorization (RMA#) and shipping instructions. Please pack your equipment well for shipping and insure it for full value. Send a note explaining the reason for return so we can investigate and make repairs as quickly as possible.

Note Please ensure that all equipment is fully decontaminated before returning. BIOPAC will refuse service if an item does not appear to meet the OSHA safe handling standards.

DAMAGED GOODS

If a shipment arrives damaged, note the damage on the delivery bill and have the driver sign it, acknowledging the damage. Contact the delivery service, and they will file an insurance claim. When damage is not obvious, call the carrier and request an inspection within 15 days of delivery. Save the container and merchandise for inspection. Please call BIOPAC for authorization for return and repair or replacement of the merchandise.

EXCHANGES AND REFUNDS

Contact BIOPAC for a Return Merchandise Authorization (RMA) number if you plan to return merchandise for credit or refund.

Equipment* may be returned for full credit, with shipping prepaid, up to 30 days after receipt of the item. Merchandise must be returned in salable condition, and credit is subject to inspection of equipment. In some circumstances, BIOPAC may accept returns outside of the 30 day window starting after the customer receipt date. However, these returns have to be authorized, in writing, by a BIOPAC representative. If BIOPAC agrees to accept the returned item(s), and the items are deemed by BIOPAC to be unused and in salable condition, there will be a 10% restocking fee applied to the full price of the item(s) being returned.

* EXCEPTIONS

- Custom items are not returnable for refund or credit.
- Equipment which has been used with blood or other potentially infectious materials cannot be returned (regardless of decontamination efforts).
- For hygienic reasons, the following items cannot be returned for refund or credit: electrode gel, electrodes, and all AFT disposable and reusable items.
- Laboratory Manuals are not returnable for refund or credit.

When returning a shipment, please pack it well, insure it for full value, and enclose a letter explaining the reason for return and clearly mark the Return Merchandise Authorization number on the outside of the box.

DELL eQuote

Savings	$5,046.08
Subtotal (8)	**$9,371.28**
Estimated Shipping	$0.00
Total	**$9,371.28**

✓ You've successfully saved a new eQuote - #1009753985787

Details

NSU-Wanda_Golman_Grant
Quote number # 1009753985787

Created October 22, 2018
Expires December 21, 2018
Created by ehlersa@nsula.edu
Authorized buyer Diana Cobb

Billing

Order contact
Alfred Ehlers, Northwestern State University
Dell Contract Code: WN14AGW
Customer agreement number: -4400002525
Phone number: (318) 357-6482
Additional::
ehlersa@nsula.edu

Billing information
ACCOUNTS PAYABLE,
NORTHWESTERN STATE UNIV
PO BOX 5655, NATCHITOCHES, LA, 71497-0001
Customer number: 28657231
Phone number: (318) 357-5716
Additional:: (318) 357-4378
NSUACCTSPAY@NSULA.EDU

Tax exemption
I am tax exempt

Shipping

Shipping information
Diana Cobb, NORTHWESTERN STATE UNIV
998 South Jefferson,
NATCHITOCHES, LA, 71497-0001
Phone number: (318) 357-5198
Additional::
cobb@nsula.edu

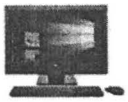
Delivery method
no charge delivery

Trade compliance
No, I will not be exporting

Payment method

Description

Wanda Goleman TF Grant Computers

Items	Quantity	Unit Price	Item total
 OptiPlex 7450 All-in-One - Build your own Discounted unit price: $1,171.41 **Estimated Ship Date** Ships in 26 - 30 business days	8	$1,802.17	$14,417.36
Premier discount **Catalog Number**: 84 / xctoo7450aiousr			-$5,046.08

Category	Description	Code	SKU	ID
OptiPlex 7450 AIO	OptiPlex 7450 AIO XCTO	7450XT	[210-AKMX]	1
Processor	Intel® Core™ i5-7500 (QC/6MB/4T/3.4 GHz/65W); supports Windows 10/Linux	I5KBL1	[338-BKYY]	146
Operating System(s)	Windows 10 Pro, 64bit English, French, Spanish	10P64M	[619-AHKN]	11
Microsoft Application Software	No Productivity Software	NOPSW	[630-AAPK]	1002
Memory	8GB (1x8GB) DDR4 at 2400MHz	8G1DR4	[370-ADJW]	3

Item total: $9,371.28

Category	Description	Code	SKU	ID
Hard Drive	M.2 128GB SATA Class 20 SSD	128SDM	[340-ABIG] [400-AOZO] [773-BBBJ]	8
Additional Hard Drive	No Additional Hard Drive	NOHDDA	[401-AADF]	637
Raid Connectivity	NO RAID	NORAID	[817-BBBN]	1009
Hard Drive Software	NO INTEL RESPONSIVE	NOINTR	[409-BBCF]	707
Stands and Mounts	Basic Stand for OptiPlex 7450	BASIC	[575-BBHQ]	558
Video Card	Intel® Integrated Graphics	INT	[490-BBFG]	6
CD ROM/DVD ROM	8x DVD+/-RW 9.5mm Optical Disk Drive	8DVDRW	[429-AAZF]	16
Wireless	Intel® Dual Band Wireless AC 8265 (802.11ac) 2x2 + Bluetooth	8265AC	[555-BDGO]	19
Driver	Intel DB WLAN 8265 Software	8265SR	[555-BDIO]	7
LCD	Non-Touch Display Panel, OptiPlex All-in-One	NONTCH	[391-BBDM]	760
Chassis Options	7450 AIO 23.8, FHD NonTouch with Camera, Integrated Graphics, Platinum PSU	CNTUPL	[329-BDHT]	116
Cables and Dongles	No Accessories	NOACCES	[461-AABV]	592
Keyboard	Dell KB522 Business Multimedia Keyboard (US)	KB522US	[580-AFHW]	4
Mouse	Black Dell MS116 Wired Mouse	MS116B	[275-BBBW]	12
Systems Management	No Out-of-Band Systems Mgmt	NOVPRO	[631-ABEU]	49
Non-Microsoft Application Software	Windows 10	WIN10	[525-BBCL] [640-BBLW] [658-BBMR] [658-BBRB] [658-BCUV]	1003
Operating System Recovery Options	OS-Windows Media Not Included	NOMEDIA	[620-AALW]	200013
E-Star	ENERGY STAR	ESTAR	[387-BBLW]	122
Canada Ship Options	US No Canada Ship Charge	USNONE	[332-1286]	111
Diagnostic CD / Diskette	No Diagnostic/Recovery CD media	NORDVD	[340-ABJI]	50
Placemat	Documentation, English, French, Dell OptiPlex 7450	DOCENFR	[340-BJWF]	60
Optical Software	Cyberlink Media Suite Essentials for Windows 10 and DVD drive (without Media)	CW8DN	[658-BBTV]	597
External Speakers	No External Speaker	NOESPK	[817-BBBC]	200095
Power Cord	System Power Cord (English)	US125V	[450-AAOJ]	20
TPM Security	Trusted Platform Module (TPM Enabled)	TPM	[329-BBJL]	297
UPC Label	No UPC Label	NOUPC	[389-BCGW]	292
Regulatory Label	Regulatory Label, Non Touch	REGNT	[389-BRFY]	676

Category	Description	Code	SKU	ID
Documentation/Disks	Safety/Environment and Regulatory Gu ide (English/French Multi-language)	EFDOC	[340-AGIK]	21
Packaging	Shipping Material for Micro System	SHPDAO	[340-BJWH] [389-BBUU]	465
Processor Branding	Intel Core i5 Label	KCI5SML	[389-BLSV]	749
Transportation from ODM to region	Standard shipment	STD	[800-BBIO]	200080
FGA Module	No FGA	NOFGA	[817-BBBB]	572
Hardware Support Services	3 Years ProSupport Plus with Next Bus iness Day Onsite Service	PPN3	[997-6870] [997-6939] [997-6949] [997-6959] [997-6979]	29

Savings: $5,046.08

Subtotal (8): $9,371.28

Savings	$5,046.08
Subtotal (8)	**$9,371.28**
Estimated Shipping	$0.00
Total	**$9,371.28**

Same day shipment subject to order size limitations, Dell standard shipping methods and payment via credit card, gift card or Dell Business Credit. Notification will be provided if there are payment delays which could impact shipping date. Electronics and accessories may ship separately.

Smart Selection. Limited quantities. Only available for orders placed by 5:59 p.m. CT Mon.–Thurs. Systems shipped the next business day after an order is placed. Subject to order approval. Software and accessories not part of the configuration will be shipped separately and may arrive after your system. Please note that Smart Selection Configuration pricing cannot be combined with other pricing offers or discounts provided or agreed to by Dell. ** Orders with Custom Factory Integration might require additional processing time.

*Dell Business Credit: Offered to business customers by WebBank, Member FDIC, who determines qualifications for and terms of credit. Taxes, shipping and other charges are extra and vary. Minimum monthly payments are the greater of $15 or 3% of the new balance shown on the monthly billing statement. Dell and the Dell logo are trademarks of Dell Inc.

**Payment solutions provided and serviced by Dell Financial Services L.L.C. or its affiliate or designee ("DFS") for qualified customers. Offers may not be available or may vary in certain countries. Where available, offers may be changed without notice and are subject to product availability, credit approval, execution of documentation provided by and acceptable to DFS, and may be subject to minimum transaction size. Offers not available for personal, family or household use. Dell and the Dell logo are trademarks of Dell Inc. Restrictions and additional requirements may apply to transactions with governmental or public entities.

[1]Subject to applicable law and regulations.

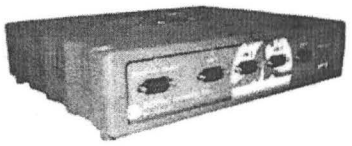
ALL ORDERS ARE SUBJECT TO APPROVAL AND ACCEPTANCE BY DELL. Pricing, availability and other terms of offer may be withdrawn or changed without notice. Dell cannot be held responsible for errors in typography or photography.

Cookie Consent

info@biopac.com
support@biopac.com
www.biopac.com

MP ACQUISITION UNITS

MP36 Four Channel Data Acquisition System
MP45 Two Channel Data Acquisition System



This document covers the following information for the MP36/MP45 Data Acquisition Systems:

The MP data acquisition unit is the heart of all BSL System packages. The MP Unit has an internal microprocessor to control data acquisition and communication with the computer. The MP Unit takes incoming signals and converts them into digital signals that can be processed with the computer. There are analog input channels (four on MP36 units, two on MP45), one of which can be used as a trigger input. The MP Unit must be connected to the computer and electrodes, transducers, and/or I/O devices must be connected to the MP Unit. Users are suggested to take a few minutes to become familiar with the MP Unit prior to making any connections.

Symbols — MP36 or MP45

Symbol	Description	Explanation
	**Type BF Equipment**	Classification
	**Attention**	Consult accompanying documents
	**On** (partial)	Turns MP36 on assuming AC300A power adapter is powered by the mains
	**Off** (partial)	Turns MP36 off if but AC300A power adapter remains powered by the mains
	**Direct current**	Direct current output
	**USB**	USB port

COMPLIANCE

Safety

The MP36/45 satisfies the Medical Safety Test Standards affiliated with IEC 60601-1. The MP36/45 is designated as Class I Type BF medical equipment

EMC

The MP36/45 satisfies the Medical Electromagnetic Compatibility (EMC) Test Standards affiliated with IEC 60601-1-2.

Types of Input Devices

There are three types of devices that connect to the MP36 and MP45: electrodes, transducers, and I/O devices.

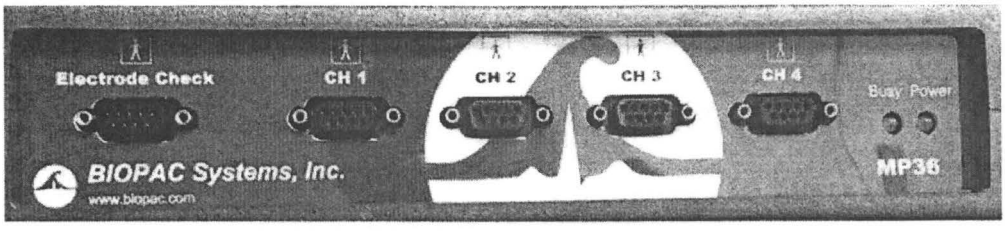
- Electrodes are relatively simple instruments that attach to the surface of the skin and pick up electrical signals in the body.
- Transducers, on the other hand, convert a physical signal into a proportional electrical signal.
- Input/Output devices (I/O for short) are specialized devices like pushbutton switches and headphones.

Simple Sensor Connectors

Regardless of the type of device connected, every sensor or I/O device connects to the MP36 using a "Simple Sensor" connector. Simple Sensor connectors are designed to plug only one way into the MP unit—no need to worry about plugging things in upside down or into the wrong socket!

- Electrodes, transducers, and the pushbutton switch all connect to the channel input ports on the front panel of the MP36 and MP45.
- Headphones and the stimulator connect to the "Analog out" port on the back panel of the MP36 and to the headphone jack on the top of the MP45.
- MP36 only: A digital device may connect to the "I/O Port" on the back panel
- MP36 only: A trigger device may be connected to the "Trigger" port on the back panel.

Front Panel



Front Panel, MP36

The front panel of the MP36 has an electrode check port, four analog input ports, and two status indicators.

Electrode Check

- The Electrode Check port is a diagnostic tool used with the BSL *PRO* software to determine if the electrodes are properly attached to the subject. *The MP45 does not have an Electrode Check port. Use BIOPAC's* EL-CHECK *standalone electrode impedance checker to measure electrode/skin contact.*

MP45 is
CH 1 and CH 2 only.

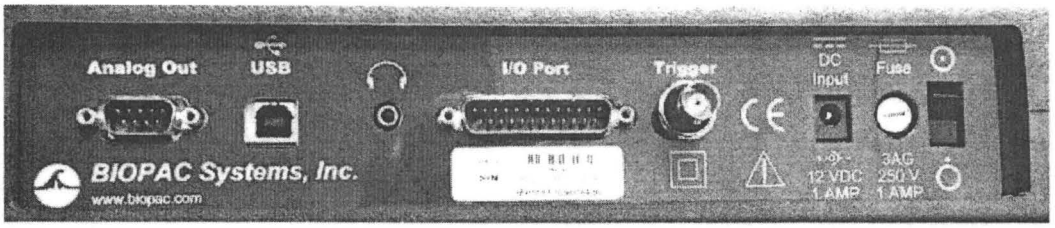
Input Ports: CH 1, CH 2, CH 3, and CH 4

- The 9-pin female analog input ports on the MP acquisition unit are referred to as Channels. There are four on the front of MP36 Units and two on the MP45. The Biopac Student Lab Lessons software will always check to see that the proper sensors are connected to the appropriate channel.

Status Indicators

- **Busy**—indicator is activated when the MP36 is acquiring data and also during the first few seconds after the MP36 is powered on to indicate that a self-test is in progress. (When the MP36 passes the power-on test, the Busy light will turn off.)
- **Power**—status indicator is illuminated when the MP36 is turned on.
- **Ready**—status indicator is illuminated when the MP45 is plugged in and communicating.

Back Panel



Back Panel, MP36

The back panel of the MP36 has an analog output port, a USB port, a headphone port, an I/O Port, a Trigger Port, a DC input, a fuse holder, a power switch, and the unit's serial number.

The back panel of the MP45 has a USB cable and headphone port.

Analog Out Port – Low Voltage Stimulator

There is one 9-pin male "D" analog output port on the back of the MP36 that allows signals to be amplified and sent out to devices such as headphones. On the MP36, Analog Out is built-in low voltage stimulator.
Not available for MP45.

USB Connection

The MP36 connects to the computer via a USB Port, located just below the word USB.

- Uses a standard USB connector.
- Should only be used to connect the MP36 to a PC or Mac.

The MP45 USB cable is a full-speed USB connector and should only be used to connect the MP45 to a PC or Mac USB port.

Headphone Output

- Accepts a standard (1/8" or 3.5 mm) stereo headphone jack.

I/O Port (MP36 only)

- Accepts a DB 25 Female connector.
- Input/Output port used to connect digital devices to the MP36.

Trigger Input (MP36 only)

- Accepts a male BNC connector.
- Input port used to send trigger signals from another device to the MP36.
- MP system external trigger inputs are TTL compatible—this means that one needs to send the external trigger input 0 volts for a TTL low and 5 volts for a TTL high.

  The external trigger inputs are equipped with internal pull-up resistors—this means that they automatically sit at TTL high, if left unattached.

  - This is a common and helpful implementation, because all one requires to implement an external trigger is to pull the external trigger input low.
  - This implementation is typically performed with an external switch placed between the external trigger input and ground.
    - When the switch is closed the external trigger input is pulled to TTL low.

- When the switch is opened the external trigger input is pulled back (by the internal pull-up resistor) to TTL high.

To sync several MP systems together, so that one external trigger can start all the MP systems simultaneously:

1. Connect all the MP systems grounds together.
2. Connect all the MP systems external trigger inputs together.
3. Place a switch between any MP system external trigger input and ground.

When the switch is pressed, all the MP systems that are connected together will be triggered simultaneously.

DC Input (MP36 only)

⎓ Use the DC Input to connect a battery, AC/DC converter or other power supply to the MP36.

- ⚠ The power supply requirements for the MP36 are 12 VDC @ 1 Amp. Only use the AC300A power adapter with the MP36. The AC300A is a 12 VDC @ 1.25 Amp power supply adapter that can connect to any mains rated as 100-250 VAC @ 50/60Hz, 40 VA.
- The receptacle is configured to accept a "+" (positive) input in the center of the connector and a "-" (negative) input on the connector housing.

Fuse Holder (MP36 only)

The fuse holder contains a fast-blow fuse that helps protect the MP36 from shorts on its power, analog, and digital I/O lines. The MP36 uses a 1.0 amp fast-blow fuse.

- To remove the fuse, use a screwdriver to remove the fuse cover located below the word Fuse.

Power Switch (MP36 only)

- ⊙ ON position — powers up the MP Unit ○ OFF position — cuts the flow of power

Fixed Hardware Low Pass Filters

To provide for anti-aliasing for the digital IIR filters and to reduce high frequency noise, the MP unit employs a low pass filter. These filtering options are incorporated into each MP unit channel:

MP36: Low pass filter is set at approximately 20 KHz

MP45: Low pass filter is set at approximately 8 KHz

Fixed Hardware High Pass Filters

To accommodate the DC offsets associated with a range of biopotential and transducer signals, the MP unit employs a switchable bank of single pole high pass filters. These filtering options are incorporated into each MP unit channel:

MP36/45: High pass filter option of DC (HP filter off), 0.05Hz, 0.5Hz and 5 Hz.

Cleaning Procedures

Before cleaning, be sure to unplug the power supply from the MP36 or unplug the MP45 USB cable from the computer. To clean the MP36 , use a damp, soft cloth. Abrasive cleaners are not recommended as they might damage the housing. Do not immerse the MP36 or any of its components in water (or any other fluid) or expose to extreme temperatures as this can damage the unit.

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MP36/45 Specifications

Analog Inputs	Front panel DSUB 9f labeled "CH #"
Number of Channels:	Isolated human-safe universal input amplifiers MP36: 4 Channels MP45: 2 Channels
A/D Sampling Resolution:	MP36: 24-bit MP45: 16-bit
Gain Ranges:	5x to 50,000x (13 steps)
Input Voltage Range:	Adjustable from ± 200 µV to ± 2 V MP36/45 ± 10 V with SS70LA
Signal to Noise Ratio	MP36: > 89 dB min MP45: > 75 dB min
Input Noise Voltage:	9 nV rms /sqrt (Hz) and 0.1 µV rms noise (0.1 Hz to 35 Hz) - nominal
Input Noise Current:	100 fA rms /sqrt (Hz) and 10 pA p-p noise (0.1 Hz to 10 Hz) - nominal
CMRR:	85 dB minimum
Software Filters:	Three programmable digital (IIR) filters; automatic or user-adjustable
Hardware Filters:	Low pass – 20 KHz (MP36); 8 KHz (MP45) High pass – DC, 0.05 Hz, 0.5 Hz, 5 Hz
Analog Output	 ± 1 V output Headphone jack (MP36/45): 3.5 mm stereo jack connection
Sample Rate:	MP36: 100,000 samples/sec each channel MP45: 48,000 samples/sec each channel
Serial Interface Type:	USB 2.0 full speed
Certification:	Complies with IEC 60601-1 EMC complies with IEC 60601-1-2 CE Marked
Dimensions/Weight:	MP36: 7 cm x 29 cm x 25 cm / 1.4 kg MP45: 3 cm x 18 cm x 10 cm / 0.3 kg
Additional Specs MP36 Only	
Analog Output:	Back panel DUSB 9m labeled "Analog Out"
Voltage Output:	Range -10 V to +10 V Resolution: 16-bits
Pulse Output:	Width: variable, 50 µsec – 100 msec Repetition: variable. 100 µsec – 5 seconds
Pulse Level:	Adjustable from -10 V to +10 V With BSLSTMB Stimulator: 0 – 100 V
Input Triggering Options	
External Trigger:	Back panel BNC labeled "Trigger" TTL positive or negative edge
Analog Trigger:	Any Input channel (front panel "CH1 – CH4")
Digital Trigger:	Any of the eight input lines (back panel DSUB 25m)
Electrode Check:	Impedance Range 0-1 MΩ (Checks Impedance between Vin+ and GND, Vin- and GND)
Additional Specs	
Operating Temperature Range:	0 – 70 deg C
Storage Temperature Range:	-10 – 70 deg C
Operating / Storage Humidity Range:	0 – 95% (non-condensing)
Operating / Storage Pressure Range:	0 – 300 kPA

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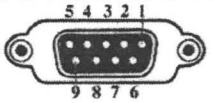
MP Unit Pin-outs

Electrode Check — MP36 Front Panel
9-PIN FEMALE DSUB

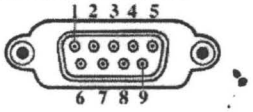
Pin		
2	Vin+	Electrode connection
3	GND	
4	Vin-	Electrode connection

MP Input — Front
CH 1, CH 2, CH 3, CH 4
9 PIN FEMALE DSUB
(1 of 4 for MP36 or 1 of 2 for MP45)



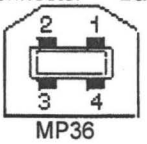
Pin	
1	Shield drive
2	Vin+
3	GND
4	Vin–
5	Shield drive
6	+5 V (100 mA max aggregate)
7	ID resistor lead 1; I2C SCL
8	ID resistor lead 2; I2C SDA
9	–5 V (100 mA max aggregate)

MP Analog Output — MP36 Back
9 PIN MALE DSUB



Pin	
1	Buffered analog or pulse output A.C. coupled (1,000 uF) Analog range: +/- 2.048 V Pulse range: 0 to 2.048 V
2	MP36 Low voltage stimulator Buffered, D.C. coupled Z out = 50 Ω Range: MP36 -10 V to +10 V
3	GND
4	+5 V (100mA max.)
5	Buffered pulse output Z out = 1 kΩ Range: 0 to 5 V
6	+12 V (100 mA max)
7	I2C SCL – Do not connect
8	I2C SDA
9	Monitor – Do not connect

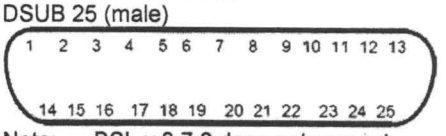
Connector — Back



MP36

Pin	
1	+5
2	-Data
3	Data +
4	GND
5	n/a
6	n/a
7	n/a
8	n/a

MP UNIT PIN OUTS continued
I/O Port — MP36 Back
DSUB 25 (male)



Note: BSL v 3.7.0 does not support Pins 7, 9, 18, 19, 20 and 21.

† Digital Input are 0-5 V with 100 K ohm pullups to 5 V on board

Pin		Pin	
1	Digital Output 1 0-5 V 8 ma	14	Digital Output 5
2	Digital Output 2 0-5 V 8 ma	15	Digital Output 6
3	Digital Output 3 0-5 V 8 ma	16	Digital Output 7
4	Digital Output 4 0-5 V 8 ma	17	Digital Output 8
5	GND Unisolated	18	Analog Input, Right 1 VRMS, centered at 0 V
6	GND Unisolated		
7	RS-232-RX	19	Analog Input, Left 1 VRMS, centered at 0 V
8	+5 V Unisolated/fused		
9	I2C-SDA 3.3. V	20	RS-232-TX 0-5 V
10	Digital Input 1† 0-5 V	21	I2C-SCL 3.3 V
11	Digital Input 2† 0-5 V	22	Digital Input 5
12	Digital Input 3† 0-5 V	23	Digital Input 6
13	Digital Input 4† 0-5 V	24	Digital Input 7
		25	Digital Input 8