

Institute for Research on Innovation & Science (IRIS)

# IRIS UMETRICS

## Object Code Classification

For the IRIS UMETRICS Fall 2022 Supplementary Data Release

Zhuoqi Zhang, IRIS Research Associate

Natsuko Nicholls, IRIS Research Manager

Matthew VanEseltine, IRIS Assistant Research Scientist

Christopher Brown, IRIS Data Science Consultant

Jason Owen-Smith, IRIS Executive Director

# Citation

Zhang, Z., Nicholls, N., VanEseltine, M., Brown, C., and Owen-Smith, J.  
Object Code Classification for the IRIS UMETRICS Fall 2022 Supplementary Data Release.  
Ann Arbor, MI: IRIS [publisher & distributor], 2022-11-1, DOI: 10.21987/v9zp-c742

## Table of Contents

Object Code Classification Project .....	3
Introduction .....	3
Project Outcome .....	4
Old and New Classifications: Similarities and Differences .....	4
Release of the Revised Object Code Lookup File .....	7
Method Discussion .....	8
Automation: Keyword Selection and Application .....	8
Manual Coding.....	9
Development of Coding Manual .....	9
Handling Shortened Word Forms .....	10
Reconstructing Keyword List.....	11
Data Summary .....	12
Appendices .....	14
Appendix A: The Original Object Code Classification.....	14
Appendix B: Top 10 Bigram Keywords by Tier 2 Category .....	16

Table 1. New Object Code Classification.....	6
Table 2. Field Descriptions.....	7
Table 3. Selected Examples of Keywords for Automation.....	9
Table 4. Selected Examples of Shortened Word Forms .....	11
Table 5. Object Codes in Vendor File, FY2017-2019 .....	12
Table 6. Object Codes in Subaward File, FY2017-2019 .....	12
Table 7. Object Codes in Employee File, FY2017-2019.....	12
Table 8. Vendor Payment Distribution by Tier 1 Category, FY 2017-2019 .....	13
Table 9. Subaward Payment Distribution by Tier 1 Category, FY 2017-2019.....	13
Table 10. Employee Transaction Count Distribution by Tier 1 Category, FY 2017-2019.....	13

# Object Code Classification Project

## Introduction

IRIS is pleased to announce that the object code lookup file was recently revised and shared with the IRIS research community as part of the 2022 supplementary release. This documentation provides researchers with details about the recently completed object code classification project and its product which supplements the IRIS UMETRICS 2022 release dataset.

IRIS receives administrative data on research spending and the purposes of spending associated with funded research projects. As part of data submission to IRIS, universities share object codes (these are often interchangeably used with “spend categories” or “expense categories”) and corresponding descriptions. IRIS had shared the data on object code at the employee, vendor, and subaward transaction level since the first data release; however, object descriptions submitted by universities were never cleaned, processed, or standardized. Data cleaning and classification work is especially important for developing our research dataset in order to tackle challenges associated with administrative data. It enables under-appreciated administrative data to provide more research opportunities. In particular, a number of categories used to track types of purchased goods and services widely vary by university, between six to over 600 (with an average of 247) from more than 30 universities. This wide variation makes it almost impossible for researchers to have any type of meaningful comparison across universities without additional work.

In 2018, Dr. Bruce Weinberg (one of the IRIS Co-Principal Investigators) initially led the object code classification coding project at the Ohio State University. During the summer of 2022, IRIS re-embarked on this object code classification project for the following reasons. First, our IRIS UMETRICS dataset has significantly grown over the last two releases. With more transaction data, it made more sense for us to revisit the previously developed classification rules. Between the 2019 and 2022 releases, the number of object codes used by universities in our data has grown extensively – five more universities provided object code data and the total number of object codes has increased from approximately 5,000 to 8,000. This growth convinced us to re-evaluate classification needs from both theoretical and empirical standpoints. Second, university object codes are constantly being added and changed over time in university financial systems. Data exploration showed us that the majority of newly added object codes originate in the two particular areas: salaries and services, which are the very two categories that had initially drawn our attention to the need for improvement. Finally, our classification

effort was integral to achieving the primary objective of producing a high quality research dataset for our research community. It aligns well with our previous and ongoing efforts to classify university campus units and job titles, and disambiguate names of funding source organizations and award recipient organizations.

At universities, object codes are used to identify or describe what is being purchased, not what the item will be used for; for instance, an ink cartridge for a color printer that is used to print marketing materials would fall under office supplies. Many universities set their own rules for permitted procurement to process orders and expenses, and thereby have an associated array of categories. However, through our environmental scanning approach, case studies of selected (IRIS and non-IRIS) university purchasing policies, rules, and procedures have helped us better understand some fundamental rules commonly underlying most universities' record-keeping and data collection best practices. Many universities use a parent-child hierarchy and this "family" structure of grouping led us to conclude that a two-tier system is best suited to capture this reality. More recently, some universities, including one of our IRIS member universities, have begun to adopt the international standard set by the United Nations Standard Products and Services Code (UNSPSC) for more efficient and accurate classification of products and services.<sup>1</sup> The use of UNSPSC served as a good reference in developing our new classification system.

## Project Outcome

### Old and New Classifications: Similarities and Differences

We developed a two-tier classification system with the first tier consisting of nine general object categorizations. The second tier is a dis-aggregate of those general categories. While this two-tier system is similar to what was originally developed by Weinberg's team, we made considerable improvements in Tier 1 categories. Some categories like *Insurance*, *Legal Settlements*, and *Public Relations* seemed either too specific or too narrowly defined for Tier 1. Instead, we grouped these categories into a more general and aggregate category, *Services*.

We found the category *Compensation* was too ambiguous for Tier 1. Instead, we created two more specific compensation categories: *Salaries and Wages* and *Benefits*. This new breakdown is important because most universities identify the purpose of spending in our Employee

---

<sup>1</sup> The United Nations Standard Products and Services Code (UNSPSC) is an open and global standard for classification of products and services. The classification system can be used for expenditure analysis, cost-effective procurement optimization, etc. Code set is available from their website, <https://store.unspsc.org/collections/codeset-downloads> (only a PDF version is free).

transaction data, almost exclusively, by these two categories. We also noticed that subcategories of *Compensation* were too student-focused. A distinction between students and non-student employees was an important one, but evidence of data granularity enabled us to further expand distinctions between faculty, postdocs, staff, and students.<sup>2</sup>

Similarly, we expanded one of the Tier 1 categories, *Travel*, by combining events and hospitality. This was done to fill a gap between what the new data shows and what a single category, “meeting expenses”, in the old Tier 2 could capture. We noticed that a number of conference attendances were difficult to be decoupled from travel-related expenses. Many recreational and non-recreational university events and hospitality components, especially recruitment activities, were either mislabeled or not captured before. We believe our new Tier 1 category, *Travel, Events, and Hospitality* should do a better job of accurately characterizing these activities as part of university research and being funded by research grants.

We eliminated travel subcategories that inferred the destination of travels, e.g. domestic (in-state, out-of-state) and international traveling, to avoid unwanted bias due to data scarcity. Technically, this type of distinction could be of interest to researchers, but such details were available only from a limited number of universities. Of course, this does not mean detailed object descriptions themselves were removed from the shared data.

After a number of revisions, we built the two-tier classification scheme with 9 categories in Tier 1 and which were broken into 34 categories in Tier 2 as shown in Table 1.

---

<sup>2</sup> As noted earlier, we obtained a few thousand more object codes over the last two releases and 31% of these new object codes (based on description) are related to employees’ salaries and wages. This is one of the reasons that we decided to utilize data granularity for more accurate classification.

Table 1. New Object Code Classification

<b>Tier 1</b>	<b>Tier 2</b>
Awards and Subsidies	Awards
	Scholarships, Fellowships and Stipends
	Student Aid and Other Loans
	Other Subsidies
Benefits	Health Insurance
	Retirement
	Other Benefit or Compensation
Equipment	Facilities and Operations Equipment
	IT, Broadcasting and Telecommunications Equipment
	Office Equipment
	Scientific, Clinical and Medical Equipment
	Other Equipment
Financial Charges and Adjustments	Financial Charges and Adjustments
Salaries and Wages	Faculty Salaries
	Postdoc Salaries
	Student Salaries
	Staff Salaries
	Temporary Staff Salaries
	Other Salaries and Wages
Services	Education and Training Services
	Facilities and Operations Services
	Healthcare Services
	Maintenance and Repair Services
	Printing, Marketing, Communication and Creative Services
	Professionals and Administrative Services
	Other Services
Supplies and Materials	IT, Broadcasting and Telecommunications Supplies
	Library, Art and Museum Materials
	Office Supplies
	Scientific, Clinical and Medical Supplies
	Other Supplies
Travel, Events, and Hospitality	Events and Hospitality
	Travel
Other	No Coding

## Release of the Revised Object Code Lookup File

The revised lookup file includes new data fields. Below we provide descriptions of each field.

*Table 2. Field Descriptions*

Field Name	Column Name	Data Type	Set Length	Field Definition
Institution ID	institution_id	int	4	IRIS-generated unique identifier assigned to each IRIS member university for de-identification purposes. Values are four or five digit numbers
Object Code	object_code_raw	varchar	200	University-specific internal object (expense) codes or spend categories to describe the nature of the goods or services purchased – this describes what is being purchased, not what the item will be used for
Object Code Description	object_code_desc	varchar	2000	University-provided object code description (raw data)
Cleaned Object Code Description	object_code_desc_clean	varchar	2000	Cleaned and processed object code description generated by IRIS through identifying abbreviations / acronyms and replacing them with expanded terms
Standardized Object Code Tier 1 Category	object_code_tier_1	varchar	200	IRIS-generated object codes have a two-tier classification system; the first tier of this system consists of nine general categorizations of the objects, including 'Other'
Standardized Object Code Tier 2 Category	object_code_tier_2	varchar	200	The second tier of the classification system; Tier 2 consists of 34 categories



# Method Discussion

## Automation: Keyword Selection and Application

Once we identified approximately 8,000 object codes from the 2022 release dataset, we decided to automate the Tier 1-level labeling process for increased efficiency and consistency. Rather than trying to manually code every single object at both aggregate (Tier 1) and dis-aggregate (Tier 2) levels, we employed a heuristic approach where an algorithm seeks to generate a set of associations between keywords and terms. Unlike in the previous work by Weinberg, where the team did not enforce any constraints for selecting keywords from object descriptions, in this case we applied a more sophisticated filtering and ranking strategy – especially when there are conflicts between keywords that prevent association with a single Tier 1 category.

In building a keyword list, we first adopted a collection of paired keywords and terms that were produced by Weinberg and his team. Although our new classification schema differs slightly, their 2018 work laid the foundation for re-examining the level of association between terms based on high or low frequency of terms. Our next step was to apply robust Python data preprocessing techniques to text data, i.e., a set of terms in some cases or sentences in others in describing objects of spending.<sup>3</sup> This procedure was crucial to improve the accuracy and relevancy of mapping particular terms to classification schemes. Description lengths ranged from 3 to 394 characters. We came up with about a dozen keywords (per Tier 1 category) extracted from these descriptions to utilize for Tier 1 classification. This automated process of keyword retrieval and application successfully labeled 77% of Tier 1 object codes.

During this process, we determined how to handle cases in which we were not able to draw a clear one-to-one relationship. For instance, “maintenance materials” in a given object description contained two keywords that would map to “*Services*” and “*Supplies and Materials*”. After an iterative process and evaluation, we decided to instruct the algorithm not to assign any Tier 1 category whenever multiple terms are detected as keywords; instead, we left them for manual coding (13% of all object codes). With our new classification method, 98% of object code descriptions were successfully mapped to a Tier 1 category through either automated process or human interpretation. Only 2% of objects are categorized as “*Other*.”

---

<sup>3</sup> The preprocessing involves a mixture of Python’s built-in string methods ([string – Common string operations – Python 3.11.0 documentation](#)), Python’s Regular Expression module ([re – Regular expression operations – Python 3.11.0 documentation](#)), and the Natural Language Toolkit (NLTK) package ([NLTK :: Natural Language Toolkit](#)).

Table 3. Selected Examples of Keywords for Automation

Words and shortened forms extracted from object code descriptions		Tier 1 category
award, awd, fellow, scholarship, subsid, sub cont, honorari, sponsor, tuition, subcont, etc.	→	Awards and Subsidies
vaca, sick, benefit, fring, retir, health insur, leav, medicar, etc.	→	Benefits
Equip, eqp, furnitur, weapon, agricultur, mri, tool, etc.	→	Equipment
Settle, transfer, trunsf, fine, penalt, etc.	→	Financial Charges and Adjustments
facult, staff, post doc, lectu, student, salar, wage, workstud, hour, temp, overtim, exempt, payrol, asst, assist, etc.	→	Salaries and Wages
repair, maint, util, bldg, space, offic, svc, srvcs, renov, tele, data, network, phone, consult, patient, workshop, contractor, advertis, snow, insur, membership etc.	→	Services
suppl, materi, softwar, hardwar, anim, drup, item, chemic, seed, warehous, fuel, gas, apparel, librari, plastic, etc.	→	Supplies and Materials
travel, tvl, domest, state, internat, plane, hospit, me, food, conf, guest, lodg, transp, etc.	→	Travel, Events, and Hospitality

## Manual Coding

### Development of Coding Manual

Once the Tier 1 category was automatically produced, object code descriptions (cleaned and processed) were interpreted by two coders (Zeng and Nicholls) to evaluate Tier 1 and then select a Tier 2 entry for each object code description. We developed and continuously revised our coding guidelines below as we iterated through the process of manual coding and

reviewing between the two coders. Since we make our detailed coding manual available to researchers upon request, here we note only a few selected general coding rules.

We have set a hierarchy for descriptions overarching two or more categories, for instance: i) When a description has both equipment and supplies, equipment is selected; ii) When a description includes both salaries and fringe benefits, we selected the “Salaries and Wages” over “benefits” for Tier 1; iii) Student employees are often in temporary positions, however, whenever a student is indicated, we chose “Student Salaries” over “Temporary Staff Salaries”; iv) We gave the Tier 1 category “Services” priority over “Supplies and Materials”; and, v) When an event includes travel, we gave the Tier 1 category “Travel” priority over “Event.”

In handling ambiguity, for instance, we articulated types of allowance or reimbursement by using additional information. Examples include: i) Given any association with research participants (human subject studies), we grouped such reimbursement into “Other Salaries and Wages”; ii) If a given allowance is associated with tuition, we then coded the description as “Other Benefits or Compensation”; iii) When a description mentions nothing more than reimbursement, we grouped the description into “Other Benefits or Compensation.”

## Handling Shortened Word Forms

In the early phase of manual coding, we discovered numerous abbreviations, acronyms, and initialisms used to describe object codes. In some cases, we detected a pattern of shortening words or phrases across universities but not in others. We concluded that manually compiling a lookup file would significantly help our initial data cleaning, manual coding, and machine learning algorithms so that misinterpretation would be minimized in coding. The lookup file, available to researchers upon request, includes 247 entries for 183 terms, indicating that a word in full form is mapped to those in various shortened form(s)—in some cases, replaced with acronyms or even misspelled. Selected examples are shown in Table 4. We utilized this lookup file when we generated the new data field, “object\_code\_desc\_clean” in the newly released file in addition to the raw data available from the “object\_code\_desc\_raw” field. It should be noted that for cases in which one abbreviated term was mapped to multiple words – e.g., “comp” for computer and compensation, “prof” for professor and professional, “reg” for regular and registration, “supp” for supplies and supplemental—we did not automatically replace them. Instead, we carefully reviewed such cases in context and chose an appropriate term in full format.

Table 4. Selected Examples of Shortened Word Forms

<b>Abbreviations, acronyms, initialisms, etc.</b>	<b>Word(s) in full format</b>
acad	academic
allow, allwnce	allowance
bldg, bldgs, blding	building
chg, chgs	charge(s)
dev, devel, developmt	development
ERE	employee-related expenses
f/a	Facilities and administrative costs
FB	fringe benefits
hr, hrly	hourly
Intl, intnl, int'l	international
M&R, R/E, R/M, R&M	maintenance and repair
mnt, mtnc	maintenance
NC, non-cap, NonC	non capital
OPE	other payroll expenses
pd, pdoc	postdoc
PRN (pro re nata), temp, tmp	temporary
prof, profess, profsnl	professional
reno, renov	renovation
RF, RFT	regular full time
serv, srvcs, svc, svcs	service(s)
T & T, trans, transp, tranport	(travel and) transportation
ten, tenu, tenr	tenure
tr, trav, tr-fr, tr-st, tr-dom, trvl, tvl	travel
veh, vehcl	vehicle

## Reconstructing Keyword List

At the beginning of the labeling process, we introduced the idea of “keywords” that operated on strong assumptions and the limited information unigrams could provide. With the dataset fully labeled, both Tier 1 and 2, we reconstructed the list of keywords based on chi-squared tests with greater rigor and accuracy. During the reconstruction, the candidates for keywords are unigrams and bigrams found in all object code descriptions. After removing items that are too rare (present in only one description) or too common (present in more than 90% of the descriptions), as well as incorporating stopword removal and normalization, we obtained the tf-idf feature vector. We performed the chi-squared test on the feature vector and category labels. A list of both unigram and bigram keywords, i.e., top 10 based on chi-squared statistics, are available in Appendix B.

# Data Summary

In this section, we provide summary statistics through which we demonstrate how the classification helped to reduce the number of unstandardized object codes used by universities. For the purpose of generalizability, in producing summary statistics we selected FY 2017-2019, the period we observed the most data coverage across universities (30 universities out of 36). Table 5 shows that the number of object codes in raw format initially ranged between 4 and 348 with an average of 160—which we believe makes any cross-sectional analysis almost impossible. Once the classification scheme was applied, we noticed that the range became much smaller, between 4 and 9 with an average of 8—our classification in Tier 1 has nine categories in total including “other”.

Table 5. Object Codes in Vendor File, FY2017-2019

		Avg	Min	Max	Stdev
<b>Vendor File</b>	Payment total	\$ 206,770,356	\$ 42,454,404	\$ 803,536,307	\$ 188,308,381.7
	Number of awards used for payment	3,900	1,340	11,743	\$ 2,064.2
	Number of vendors (by vendor ID)	9,700	4,341	20,245	\$ 3,905.3
	Number of raw object codes	160	4	348	\$ 91.8
	Number of standardized object code categories	8	4	9	\$ 1.1

Tables 6 and 7 show summary statistics using subaward and employee transaction data from the same period, FY 2017-2019. Similarly, we note that the number of object codes used by universities was dramatically reduced through our classification.

Table 6. Object Codes in Subaward File, FY2017-2019

		Avg	Min	Max	Stdev
<b>Subaward File</b>	Payment total	\$ 166,987,639	\$ 13,324,326	\$ 711,770,644	\$ 139,763,832.8
	Number of awards used for payment	629	97	1343	\$ 374.4
	Number of subawards (by subaward ID)	526	138	2,102	\$ 365.6
	Number of raw object codes	12	1	106	\$ 26.5
	Number of standardized object code categories	1	1	8	\$ 1.9

Table 7. Object Codes in Employee File, FY2017-2019

		Avg	Min	Max	Stdev
<b>Employee File</b>	Payment total	N/A	N/A	N/A	N/A
	Number of transactions	244,783	53,844	725,450	164,750.6
	Number of awards used for payment	4,841	1,084	14,854	3,057.9
	Number of employees (by emp number)	10,394	1,926	27,009	5,715.3
	Number of raw object codes	29	1	81	20.9
	Number of standardized object code categories	3	1	7	1.6

Tables 8-10 show the distribution of vendor and subaward payment as well as employee transaction count by standardized object code. Once object codes are standardized, it is easy for

us to identify the purpose of spending associated with vendor and subaward payment in the IRIS UMETRICS data.

Table 8. Vendor Payment Distribution by Tier 1 Category, FY 2017-2019

File	Standardized Object Code (Tier 1)	Payment Total	Percentage
Vendor File	Awards and Subsidies	\$ 466,988,492	8%
	Benefits	\$ 165,356,186	3%
	Equipments	\$ 1,005,242,408	16%
	Financial Charges and Adjustments	\$ 58,377,837	1%
	Other	\$ 165,059,402	3%
	Salaries and Wages	\$ 336,529,036	5%
	Services	\$ 1,657,878,813	27%
	Supplies and Materials	\$ 1,701,139,058	27%
	Travel, Events and Hospitality	\$ 646,539,443	10%

Table 9. Subaward Payment Distribution by Tier 1 Category, FY 2017-2019

File	Standardized Object Code (Tier 1)	Payment Total	Percentage
Subaward File	Awards and Subsidies	\$ 4,791,092,312	96%
	Benefits	\$ 61,158,208	1%
	Equipments	\$ 8,683,812	0%
	Financial Charges and Adjustments	\$ 5,189	0%
	Other	\$ 2,612,403	0%
	Salaries and Wages	\$ 2,968,614	0%
	Services	\$ 57,901,020	1%
	Supplies and Materials	\$ 82,183,462	2%
	Travel, Events and Hospitality	\$ 3,024,139	0%

Table 10. Employee Transaction Count Distribution by Tier 1 Category, FY 2017-2019

File	Standardized Object Code (Tier 1)	Transaction Total	Percentage
Employee File	Awards and Subsidies	200,057	3%
	Benefits	332,757	5%
	Equipments	0	0%
	Financial Charges and Adjustments	31,398	0%
	Other	9,642	0%
	Salaries and Wages	5,765,757	87%
	Services	255,310	4%
	Supplies and Materials	14,027	0%
	Travel, Events and Hospitality	193	0%

# Appendices

## Appendix A: The Original Object Code Classification

### I. Object Classification

1. Travel
  - a. Domestic
    - i. In-State
    - ii. Out-of-State
  - b. International
  - c. Parking
2. Equipment
  - a. Capital
  - b. Non-Capital
  - c. Office/Administrative
3. Supplies
  - a. Administrative
  - b. Laboratory
  - c. Clinical
  - d. Animals
  - e. Shipping and Mail
  - f. Telecom
  - g. Computers and Software
  - h. Meeting Expenses
4. Facility Maintenance and Repair
  - a. Rent
  - b. Utilities
  - c. Maintenance
  - d. Vehicles
  - e. Alterations, Renovations, Construction
5. Compensation
  - a. Student
    - i. Graduate
    - ii. Undergraduate
  - b. Non-student
  - c. Subject
6. Services
  - a. Educational
    - i. Books, Periodicals
    - ii. Conferences, Seminars, Training
  - b. Consulting and Professional

- i. Professional/Organizational Dues
    - ii. Publication Services
  - c. Non-Professional
- 7. Honors, Awards, Gifts
- 8. Public Relations
- 9. Financial Charges
  - a. Internal Transfers
- 10. Insurance
- 11. Legal Settlements
- 12. Other



## Appendix B: Top 10 Bigram Keywords by Tier 2 Category

index	unigram	bigram
Facilities and Operations Services	renovations, improvements, construction, space, buildings, building, land, water, electricity, utilities	construction expense, real property, utilities gas, rental land, rental space, alterations renovations, utilities electricity, utilities water, building maintenance, space rental
Other Services	express, waste, mail, service, laundry, memberships, security, freight, postage, services	laundry services, laboratory services, research services, dues memberships, lab services, general services, service request, internal service, contractual services, computer services
Professional and Administrative Services	fees, background, liability, audit, consultant, consultants, legal, professional, consulting, insurance	administrative charges, services professional, consultant fees, legal services, services fees, liability insurance, consulting services, consultant services, professional fees, professional services
Healthcare Services	vaccines, inpatient, hospitalization, dental, outpatient, medical, hospital, nursing, care, patient	dental services, hospital medical, fees medical, laboratory fees, nursing services, ray services, lab testing, care costs, medical services, patient care
Maintenance and Repair Services	software, major, vehicle, workstation, pm, preventive, instrument, repairs, repair, maintenance	maintenance repairs, maintenance services, vehicle repair, maintenance contract, equipment maintenance, repairs maintenance, equipment repair, maintenance repair, software maintenance, repair maintenance
Printing, Marketing, Communication and Creative Services	long, publications, binding, publication, telecommunication, telephone, marketing, communication, printing, advertising	media publication, copying services, public relations, advertising services, printing services, publication costs, printing duplicating, telephone expense, photographic services, long distance
Education and Training Services	online, teachers, career, prog, seminar, courses, course, workshop, development, training	student functions, training registration, professional development, outside training, services training, instructional services, conferences training, training development, educational training, training services
IT, Broadcasting and Telecommunications Equipment	peripherals, tv, radio, servers, equipment, information, telephones, telephone, computers, computer	information technology, computers capital, audiovisual equipment, network equipment, telephone equipment, equipment computer, purchase computer, processing equipment, telecommunication equipment, computer equipment
Office Equipment	wood, copier, machines, equipment, photocopier, printers, fixtures, office, furnishings, furniture	photocopier rental, reproduction equipment, equipment furniture, equipment office, furniture non, furniture capital, furnishings equipment, office furniture, office equipment, furniture equipment

Scientific, Clinical and Medical Equipment	marine, kits, lasers, surgical, laboratory, equipment, implant, instrumentation, pump, scientific	research equipment, scientific lab, marine equipment, rental marine, professional scientific, research vessel, clinical equipment, lab equipment, scientific equipment, medical equipment
Other Equipment	uh, automobiles, fabrication, minor, trucks, vehicles, capital, progress, fabricated, equipment	equipment rental, educational equipment, capitalized equipment, equipment fabrication, minor equipment, lease equipment, rental equipment, capital equipment, equipment progress, fabricated equipment
Facilities and Operations Equipment	connection, 200, saws, backflow, hand, valves, lift, hardware, small, tools	power repair, hedge clippers, equipment 5k, fixed equipment, maintenance equipment, power tools, maintenance miscellaneous, tools 100, building fixed, small tools
Other Supplies	resale, refreshments, beverages, parts, materials, uniforms, clothing, books, food, supplies	supplies materials, general operating, athletic supplies, photography supplies, training supplies, shop supplies, instructional supplies, cleaning supplies, food supplies, maintenance supplies
IT, Broadcasting and Telecommunications Supplies	soft, circuit, license, accessories, programs, electronic, databases, database, computer, software	software non, parts supplies, software rental, software service, software capital, electronic supplies, electrical supplies, software license, computer software, computer supplies
Library, Art and Museum Materials	subscript, serials, periodical, books, periodicals, microforms, monographs, film, library, subscriptions	library collection, university library, library acquisitions, film rental, library supplies, library books, subscriptions periodicals, books library, library acquisition, library materials
Office Supplies	copier, certificates, diplomas, envelopes, binders, sheets, stationery, paper, signage, office	external vendor, office expense, office supply, diplomas certificates, printing office, stationery office, paper products, paper supplies, supplies office, office supplies
Scientific, Clinical and Medical Supplies	gas, pharmaceuticals, supplies, animal, gases, seed, fuel, drugs, animals, chemicals	hospital supplies, natural gas, radioactive materials, research animals, clinical supplies, supplies laboratory, research supplies, laboratory supplies, lab supplies, medical supplies
Faculty Salaries	month, time, salaries, professor, salary, regular, instructor, lecturer, academic, faculty	faculty regular, physician salaries, academic salary, wages academic, medical faculty, wages faculty, salaries faculty, academic salaries, salary faculty, faculty time
Other Salaries and Wages	incentives, shift, wages, subjects, salary, subject, differential, overtime, fringes, participant	human subject, participant supplemental, research participant, salaries wages, wages overtime, research subjects, subject payments, differential pay, participant support, salary fringes

Staff Salaries	librarian, salary, administrative, clerical, executive, secretarial, exempt, salaries, administrator, staff	staff salary, staff time, staff overtime, professional nonexempt, staff wages, professional salaries, professional staff, academic staff, staff exempt, staff salaries
Postdoc Salaries	researcher, nrsa, candidates, fellow, degree, activ, postdoc, post, doctoral, fellows	non nu, non degree, non fee, doctoral fellow, time employee, employee benefits, postdoc resident, doctoral salaries, salaries post, post doctoral
Student Salaries	hourly, postgrad, workstudy, assistants, teaching, work, graduate, study, student, assistant	undergraduate student, postgrad trainee, student assistant, federal work, graduate student, student hourly, research assistant, teaching assistant, wages student, work study
Temporary Staff Salaries	nonexempt, perf, limited, casual, tep, traineeship, hire, wages, hourly, temporary	staff hourly, temporary 50, term employee, temporary casual, temporary employee, overtime hourly, temporary staff, state trainee, temporary employees, hourly time
Other Benefits or Compensation	longevity, allowances, practice, unemployment, recognition, benefits, fringe, leave, vacation, allowance	subsidized parking, social security, incentive pay, vacation pay, employee recognition, federal fringe, faculty group, group practice, housing allowance, fringe benefits
Retirement	adj, payroll, pen, accu, matching, teacher, trea, oasi, employer, retirement	benefits employee, expenses student, pen accu, retirement pen, benefits trea, trea employee, employee relations, employee retirement, federal retirement, payroll expenses
Health Insurance	fringe, adult, vision, plans, benefits, premiums, active, insurance, medicare, health	insurance graduate, lecturer registration, registration fringe, health life, health care, benefits health, student health, benefits medicare, medical insurance, health insurance
Awards	gifts, subgrant, awards, prizes, 25k, honoraria, subcontracts, subcontract, sponsored, subaward	subcontracts 25, subcontract allowed, excess 25k, prizes awards, subgrant excess, includes 25k, subgrant includes, 25 000, subcontract subgrant, sponsored subaward
Scholarships, Fellowships and Stipends	reportable, aid, scholars, fellow, fellowship, scholarship, stipends, fellowships, stipend, scholarships	fellow scholarship, scholarship expense, non enrolled, scholar fellow, fellowship expense, fellows scholars, aid fellowships, aid stipends, scholarship fellowship, fellow stipend
Other Subsidies	waivers, payments, schools, inst, employees, remissions, aid, remission, waiver, tuition	graduate tuition, employee tuition, tuition remission, tuition allowance, tuition waiver, tuition fee, tuition employees, aid tuition, tuition payments, tuition fees
Student Aid and Other Loans	excluding, student, based, loan, resident, scholar,	depend allowance, graduate non, collection expense, non resident, grant aid, financial aid, student loans, aid undergraduate, resident aid, student aid

	undergraduate, need, loans, aid	
Travel	diem, mileage, lodging, moving, domestic, relocation, transportation, foreign, state, travel	employee travel, diem state, transportation state, travel domestic, state travel, moving expense, domestic travel, travel foreign, foreign travel, travel state
Events and Hospitality	tickets, recruitment, recruiting, meetings, exhibits, hospitality, event, events, entertainment, conference	event tickets, business meals, conference expenses, entertainment expense, event state, group meals, hospitality expense, meeting expense, conference meals, special events
Financial Charges and Adjustments	deferred, transfer, discounts, loans, refunds, investment, taxes, transfers, demurrage, bank	vat tax, bad debts, fines penalties, cost sharing, transfer funds, property taxes, discounts earned, credit card, bank service, bank fees
No Coding	current, fees, penn, operating, income, pass, purchases, payables, miscellaneous, expenses	owned 5k, curr expense, alloc adj, procurement card, general expense, pass 25k, field expense, miscellaneous expenses, purchases resale, operating expenses