



AUXILIUM COLLEGE (Autonomous)

(Accredited by NAAC with A+ Grade with a CGPA of 3.55 out of 4 in the 3rd cycle)
Gandhi Nagar, Vellore – 6.

1.3 Curriculum Enrichment

1.3.2 Number of Certificate/Value added courses/Diploma Programmes offered by the institutions and online courses of MOOCs, SWAYAM/e-PG Pathshala / NPTEL and other recognized platforms where the students of the institution have enrolled and successfully completed during the last five years.

Syllabus – Value Added Courses

S.No.	Value Added Course Names
1	Cottage Industries
2	Tamil Cultural Culinary Arts
3	Tamil for Competitive Examinations (TNPSC)
4	Inclusive Commerce and Governance for Sustainability
5	Application of Data Analytics
6	Learning Open-Source Simulation Software - SCILAB
7	Fundamentals of Data Analytics
8	Fashion Designing
9	Entrepreneurial Skills in Botany
10	Digital Marketing
11	Intellectual Property Rights
12	Sustainable Development Goals
13	Application of Business Analytics using Advanced Excel ,Python and Tableau
14	Class Based Programming
15	Software Development Framework Using Core MVC
16	Web Framework for Data Science
17	Mobile Application Development
18	Portrayal Of Art

Department of Chemistry

Value-Added Course

VACCHCI22 - COTTAGE INDUSTRIES

Code	Title of The Paper	Hours
VACCHCI22	Cottage Industries	30

Learning Objectives:

- To teach basic skills in needle work, hand embroidery, paper craft and baking.
- To impart skills for preparing household small-scale products.
- To enable the students to initiate start-ups for employment.

Course Learning Outcomes:

CLO1: The students will develop skills in hand embroidery, bead work and mirror work.

CLO2: The students will be able to bake cookies, bread and cakes.

CLO3: The students will be able to prepare house hold small scale products such as soap, phenyl, herbal oil, mosquito repellent and dish washing powder.

CLO4: The students will be able to initiate start-ups for employment.

CLO5: The students will learn the art of packing, branding and marketing.

Unit 1: Embroidery and Needle work

(6 hours)

Motif –Meaning, types, placement. Hand Embroidery: Introduction tools and equipments. Basic stitches of Hand embroidery- Techniques and Applications. Types of stitches – Back stitch, chain stitch, stem stitch, feather stitch, fish hole stitch, cross stitch and satin stitch. Basics in bead work and mirror work.

Unit 2: Baking

(6 hours)

Basic baking ingredients – Essential equipment and uses. Characteristics and functions of flour, sugar, eggs and milk Products, leavening agents, chocolate and cocoa, salt, spices and flavourings in the baking of cakes. Textures and decoration of cakes. Yeast - raised products – White bread and Wheat bread. White dinner rolls – Basic sweet dough. Cookies – Drop cookies – Rolled cookies – Bar cookies.

Unit 3: Paper Craft

(6 hours)

Different types of Paper craft- Flower craft, wall hangings, decorative paper work, Paper bags, card making and origami.

Unit 4: Small Scale Products

(6 hours)

Preparation of household products: Phenyl, Soap and Shampoo – Basic ingredients, method of preparation, packing and marketing.

Unit 5: Small Scale Products

(6 hours)

Herbal hair growth oil, Herbal Mosquito repellent and dish wash powder: Collection and storage of raw materials, preparation, packing and marketing.

தமிழ்த்துறை

VACTACE22 - TAMIL FOR COMPETITIVE EXAMINATIONS (TNPSC)

Code	Title of paper	Hours
VACTACE22	Tamil for Competitive Examinations (TNPSC)	30

கற்றலின் வெளிப்படுத்திறன்

1. தமிழ் இலக்கியத்தின் வாயிலாக போட்டித் தேர்வுக்கு மாணவிகளை ஆயத்தப்படுத்துதல்
2. போட்டித் தேர்வினை எதிர்க்கொண்டு வேலை வாய்ப்பினை பெற வழிவகுத்தல்
3. தன்னம்பிக்கையுடன் வாழ வழி செய்தல்

அலகு - ஒன்று

(6 மணி நேரம்)

இலக்கியங்கள்

1. திருக்குறள் தொடர்பான செய்திகள், மேற்கோள்கள், தொடரை நிரப்புதல் (இருபத்தைந்து அதிகாரம் மட்டும்) அன்பு, பண்பு, கல்வி, கேள்வி, அறிவு, அடக்கம், ஒழுக்கம், பொறை, நட்பு, வாய்மை, காலம், வலி, ஒப்புரவறிதல், செய்நன்றி, சான்றாண்மை, பெரியாரைத் துணைக்கோடல், பொருள் செயல்வகை, வினைத்திட்டம், இனியவை கூறல், ஊக்கமுடைமை, ஈகை, தெரிந்து செயல்வகை, இன்னா செய்யாமை, கூடா நட்பு, உழவு.
2. அறநூல்கள் - நாலடியார், நாண்மணிக்கடிகை, பழமொழி நானூறு, முதுமொழிக்காஞ்சி, திரிகடுகம், இன்னா நாற்பது, இனியவை நாற்பது, சிறுபஞ்ச மூலம், ஏலாதி, ஒளவையார் பாடல்கள் தொடர்பான செய்திகள், பதினெண்கீழ்க்கணக்கு நூல்களில் பிற செய்திகள்.
3. கம்பராமாயணம், இராவண காவியம் தொடர்பான செய்திகள், பாவகை, சிறந்த தொடர்கள்.
4. புறநானூறு, அகநானூறு, நற்றிணை, குறுந்தொகை, ஐங்குறுநூறு, கலித்தொகை தொடர்பான செய்திகள், மேற்கோள்கள், அடிவரையறை, எட்டுத்தொகை, பத்துப்பாட்டு நூல்களில் உள்ள பிற செய்திகள்.
5. சிலப்பதிகாரம்-மணிமேகலை தொடர்பான செய்திகள், மேற்கோள்கள், சிறந்த தொடர்கள், உட்பிரிவுகள் மற்றும் ஐம்பெரும் - ஐஞ்சிறு காப்பியங்கள் தொடர்பான செய்திகள்.
6. பெரிய புராணம்- நாலாயிர திவ்வியப்பிரபந்தம் - திருவிளையாடற் புராணம் - தேம்பாவணி - சீராப்புராணம் தொடர்பான செய்திகள்.

அலகு - இரண்டு

(6 மணி நேரம்)

இலக்கியங்கள்

1. சிற்றிலக்கியங்கள்

திருக்குற்றாலக்குறவஞ்சி - கலிங்கத்துப்பரணி - முத்தொள்ளாயிரம், தமிழ்விடு
தூது - நந்திக்கலம்பகம் - முக்கூடற்பள்ளு - காவடிச்சிந்து - முத்துக்குமாரசாமி
பிள்ளைத்தமிழ் - இராஜ ராஜ சோழன் உலா - தொடர்பான செய்திகள்.

2. மனோன்மணியம் - பஞ்சாலி சபதம் - குயில் பாட்டு - இரட்டுற மொழிதல்
(காளமேகப் புலவர்) - அழகிய சொக்கநாதர் தொடர்பான செய்திகள்.
3. நாட்டுப்புற பாட்டு - சித்தர் பாடல்கள் தொடர்பான செய்திகள்.
4. சமய முன்னோடிகள் - அப்பர், சம்பந்தர், சுந்தரர், மாணிக்கவாசகர், திருமூலர்,
குலசேகர ஆழ்வார், ஆண்டாள், சீத்தலைச் சாத்தனார், எச்.ஏ. கிருட்டிணனார்,
உமறுப்புலவர் தொடர்பான செய்திகள், மேற்கோள்கள், சிறப்புப் பெயர்கள்.

அலகு - மூன்று

(6 மணி நேரம்)

இலக்கணம்

1. பொருத்துதல் - பொருத்தமான பொருளைத் தேர்வு செய்தல், புகழ் பெற்ற நூல்,
நூலாசிரியர்.
2. தொடரும் தொடர்பும் அறிதல் (அ) இத்தொடரால் குறிக்கப்படும் சான்றோர்
(ஆ) அடைமொழியால் குறிக்கப்படும் நூல்.
3. பொருந்தாச் சொல்லைக் கண்டறிதல்.
4. பிழைதிருத்தம் - சந்திப்பிழை நீக்குதல், ஒருமை பன்மை பிழைகளை நீக்குதல்,
மரபுப் பிழைகள், வழுஉச் சொற்களை நீக்குதல், பிறமொழிச்சொற்களை
நீக்குதல்.
5. ஆங்கிலச் சொல்லுக்கு நேரான தமிழ்ச் சொல்லை அறிதல்.
6. ஒலி வேறுபாடறிந்து சரியான பொருளை அறிதல்.
7. ஒரெழுத்து ஒரு மொழிக்கு உரிய பொருளைக் கண்டறிதல்.
8. வேர்ச்சொல்லைத் தேர்வு செய்தல்.
9. வேர்ச்சொல்லைக் கொடுத்து, வினைமுற்று, வினையெச்சம்,
வினையாலணையும் பெயர், தொழிற் பெயரை உருவாக்கல்.
10. அகர வரிசைப்படி சொற்களைச் சீர்செய்தல்.
11. சொற்களை ஒழுங்குபடுத்தி சொற்றொடர் ஆக்குதல்
12. பெயர்ச்சொல்லின் வகை அறிதல்
13. இலக்கணக் குறிப்பறிதல்
14. விடைக்கேற்ற வினாவைத் தேர்ந்தெடுத்தல்
15. எவ்வகை வாக்கியம் எனக் கண்டெழுதுதல்
16. தன்வினை, பிறவினை, செய்வினை, செயப்பாட்டுவினை, வாக்கியங்களை
கண்டெழுதுதல்.

17. உவமையால் விளக்கப்பெறும் பொருத்தமான பொருளைத் தேர்ந்தெழுதுதல்
18. எதுகை மோனை, இயைபு இவற்றுள் ஏதேனும் ஒன்றை தேர்ந்தெழுதுதல்
19. பழமொழிகள்

அலகு - நான்கு

(6 மணி நேரம்)

தமிழ் அறிஞர்களும் தமிழ்த் தொண்டும்

1. பாரதியார், பாரதிதாசன், நாமக்கல் கவிஞர், கவிமணி தேசிக விநாயகனார், தொடர்பான செய்திகள், சிறந்த தொடர்கள் சிறப்புப் பெயர்கள்
2. மரபுக் கவிதை - முடியரசன், வாணிதாசன், சுரதா, கண்ணதாசன், உடுமலை நாராயண கவி, பட்டுக்கோட்டை கல்யாண சுந்தரம், மருதகாசி தொடர்பான செய்திகள், அடைமொழிப் பெயர்கள்
3. புதுக்கவிதை - ந. பிச்சமூர்த்தி, சி.சு. செல்லப்பா, தருமு சிவராமு, பசுவய்யா, இரா. மீனாட்சி, சி.மணி, சிற்பி, மு. மேத்தா, ஈரோடு தமிழன்பன், அப்துல்ரகுமான், கலாப்பிரியா, கல்யாணஜீ, ஞானக்கூத்தன், - தொடர்பான செய்திகள், மேற்கோள்கள், சிறப்புத் தொடர்கள்.
4. தமிழில் கடித இலக்கியம் - நாட்குறிப்பு, ஜவகர்லால் நேரு, மகாத்மா காந்தி, மு.வரதராசனார், பேரறிஞர் அண்ணா, தொடர்பான செய்திகள்
5. நிகழ்கலை (நாட்டுப்புற கலைகள்) தொடர்பான செய்திகள்
6. தமிழில் சிறுகதைகள் தலைப்பு - ஆசிரியர் - பொருந்துதல்
7. கலைகள் - சிற்பம் - ஓவியம் - பேச்சு - திரைப்படக்கலை தொடர்பான செய்திகள்
8. தமிழின் தொன்மை - தமிழ்மொழியின் சிறப்பு, திராவிட மொழிகள் தொடர்பான செய்திகள்
9. உரைநடை - மறைமலை அடிகள் பரிதிமாற்கலைஞர், ந.மு.வேங்கடசாமி நாட்டார் ரா.பி.சேதுப்பிள்ளை
10. தமிழ்பணி தொடர்பான செய்திகள்

அலகு - ஐந்து

(6 மணி நேரம்)

தற்கால நடப்பு நிகழ்வுகள்

1. நடப்பாண்டில் வழங்கப்படும் விருதுகள்
2. நடப்பாண்டில் வெளியிடப்படும் நூல்கள்
3. நடப்பாண்டில் விளையாட்டு நிகழ்வுகள்
4. நடப்பாண்டில் அரசியல் நிலவரங்கள்
5. நடப்பாண்டில் பொருளாதார மாற்றங்கள்

தமிழ்த் துறை
Value-Added Course

சமையல் நுண்கலை – பாடத்திட்டம்

VACTATC22 – TAMIL CULTURAL CULINARY ARTS

Code	Title of paper	Hours
VACTATC22	Tamil Cultural Culinary Arts	30

கற்றலின் வெளிப்படுத்திறன்

- மனிதரின் அடிப்படைத் தேவைகளில் ஒன்றான உணவை சுவையுள்ளதாகவும், ஆரோக்கியமானதாகவும் சமைப்பதின் அவசியத்தை அறியச் செய்தல்.
- சமையல் கலை கற்பிப்பதன் மூலமாக மாணவிகளுக்கு சுய வேலைவாய்ப்பை ஏற்படுத்த உணக்கமளித்தல். சமையல் தொடர்பான வேலைவாய்ப்பு அறிமுகம் செய்தல்.
- சமையல் கலையை சமூக வரலாற்று தொடர்பு சாதன நோக்கில் அறிய செய்து சமையல் கலையில் உள்ள கருத்தாக்கங்களை மறுமதிப்பிடு செய்யவைத்தல்.

அலகு - ஒன்று

சமையல் கலை – அறிமுகம்

(2 மணி நேரம்)

சமையல் குறித்த அறிமுகம் – வரலாறு –உணவு பொருட்கள் அறிமுகம்- அவற்றின் பண்புகளும் - அடிப்படை தயாரிப்புகள்- சமையல் அறை பாதுகாப்பு.

செயல் முறை வகுப்பு – 1

(3 மணி நேரம்)

தமிழர் இயற்கை உணவு வகைகள் பழங்களை ரசங்களை செய்தல்.

அலகு – இரண்டு

பல்வேறு உணவு வகைகள்

(2 மணி நேரம்)

உணவு உற்பத்தியின் அடிப்படை கோட்பாடுகள் - இந்திய உணவு வகைகள்- முதன்மையான உணவு - தானிய உணவு - காய்கறி உணவு - முட்டை வகை உணவு - பழச்சாறு வகைகள் - குளிர்பானங்கள் - சாண்ட்விச் மற்றும் மில்க் ஷேக்.

செயல் முறை வகுப்பு - 2

(3 மணி நேரம்)

உணவிற்கான இடம் தயாரிப்பு, தானிய உணவு வகைகள், காய்கறி உணவு வகைகளை செய்ய சொல்லிதருதல்.

அலகு – மூன்று ஆரோக்கியமான உணவு முறைகள்

(3 மணி நேரம்)

தமிழ் மருத்துவ உணவு – பழக்கவழக்கங்கள் - பதப்படுத்துதல் – விழிப்புணர்வு - சரிவிகித உணவு – உணவு உட்கொள்ளும் முறை - பாரம்பரிய சிறுதானிய உணவு

செயல் முறை வகுப்பு - 3

(4 மணி நேரம்)

கஷாயம், துவையல், மசியல், பச்சடி, சாமை, திணை கேசரி, கேழ்வரகு அடை, கொழுக்கட்டை, உளுந்து புட்டு, சுசீயம், வல்லாரை, தூதுவளை, கறிவேப்பிலை பொடி தயாரிப்பு.

அலகு - நான்கு பெண்களும் உணவும்

(3 மணி நேரம்)

பெண்களின் வாழ்வும் உணவும்(மாதவிடாய், கருத்தறித்தல், மகப்பேறு கால உணவுகள்)- உடல்நலமும் உணவும் - சமையலறை மேலாண்மை - உணவுப் பொருட்கள் வாங்குவதை திட்டமிடல் - பராமரிப்பு மற்றும் பாதுகாத்தல் - அலங்காரப்படுத்துதல் .

செயல் முறை வகுப்பு - 4

(4 மணி நேரம்)

உணவு வகைகளை திட்டமிட அலங்காரிக்க சொல்லித்தருதல்

அலகு - ஐந்து உணவு மற்றும் சமூக கலாச்சாரம்

(3 மணி நேரம்)

சமூக கட்டமைப்பு உணவு வகைகள் - சமையலும் பாரம்பரிய அறிவும் - பாலின சமத்துவமும் சமயல் கலையும் - சமையலும் திரைப்படமும் - சமையல் குறிப்பு எழுதுதல்.

செயல் முறை வகுப்பு - 5

(3 மணி நேரம்)

உணவு குறித்த களஆய்வு நேர்காணல் விழிப்புணர்வு முகாம்.

பார்வை நூல்கள்

1. தமிழர் உணவு – பக்தவச்சல பாரதி, காலச்சுவடு பதிப்பகம், 2011
2. சமையல் நுண்கலை- நெம்மேலி இந்திரா காசிநாதன் - மதிநிலை பதிப்பகம், சென்னை 2013
3. இதயநோய் முதல் செரிமான நோய்வரை உணவு மருத்துவம் – டாக்டர் சு. நரேந்திரன், கற்பகம் புத்தகாலயம், 2010
4. கிராமத்து சமையல் – ர. கன்னிகா, டிஸ்கவரி புக் பேலஸ், 2018
5. சமையல்கலை - சீதாலட்சுமி, பாரதி பதிப்பகம்,
6. சிறுதானிய சமையல் மற்றும் சாறுகள் – ராதா சீனிவாசன், கற்பகம் புத்தகாலயம், 2014
7. தமிழர் நாகரீகமும் பண்பாடும் – அ. தட்சிணாமூர்த்தி, யாழ் வெளியீடு, 1999
8. வீட்டிற்கு தேவையான விதவிதமான சமையல் சைவம் – வசந்தியம்மாள், மயிலவன் பதிப்பகம், 2014
9. வெயிலுக்கு இதழுட்டும் சாலட், பச்சடி வகைகள் – பா. எழில்செல்வி, 2012
10. அன்றாட பாரம்பரிய சமையல் – ராசாமணி சண்முக சுந்தரம், பழனியப்பா பிரதர்ஸ் பதிப்பகம், 2020

Department of Commerce
Value-Added Course
VACCOGS22 - INCLUSIVE COMMERCE AND GOVERNANCE FOR
SUSTAINABILITY - GLOBAL TRENDS

Code	Title of The Paper	Hours
VACCOGS22	Inclusive Commerce And Governance For Sustainability - Global Trends	30

Course Learning Outcomes:

- Understand the role of business in the transition to sustainable development to create a prosperous future for all.
- Providing Sustainable Financial Literacy to young people with an opportunity to participate in the global development and nation building process.
- To initiate and participate in a service-learning programme through economic literacy
- Providing practical experience on climate finance, Grassroot experiential learning workspace
- Demonstrate Individual contributions to a Collaborative Team Case

Course Outline:

The Curriculum is prepared to have the United Nations Sustainable Development Goals as a base to emphasize the knowledge of Commerce & Business among young people to engage and evolve in the developmental process

Unit I

International Monetary Fund & Sustainable Development Goals - People –Fostering Inclusion – Prosperity–Growth-Job and Poverty Reduction – Planet - Engaging in Climate Action – Peace-Strengthening Governance and Tackling Corruption – Partnerships - Financing the SDGs (Practical and Cases)

Unit II

Diving into goals – Quality Education for a Financially Literate Society – An Insight – Gender-based Financial Liberty – Income Inequality – Outcome Based Experiential learning and Community Immersion – Entrepreneurs Talk series.

Unit III

Global Trends for Business and Society – Environment and Social Consumerism – Carbon footprint – Reuse-Reduce-Recycle – Climate Finance Awareness – Introduction and Indulgence with Global Lectures/Speakers.

Unit IV

Experiential Learning on Policy Making - Policy Maker - Model Finance Ministry - Budget Planning - Industry - Trade - Commerce & Business - Skill Development

Unit V

Sustainable Business - Business Plan Making and Contest – Project submission- Monitoring & Evaluation – Project Pitching & Presentation - Practical Learning on Seed Funds- Venture Capitalism

Course Delivery Mode: Blended (Online-Offline)

**Sessions and schedules will be altered based on the participants and the Institution's timeline/needs*
**Support and facilitation will be provided by various intergovernmental organisations and youth networks*

Methodology:

Brainstorming | Experiential Learning, Field Visits & Projects | Storytelling | Group Discussion | Paper presentation | Case Studies | Lectures | Impact Stories | Practitioners View | Policy Papers

Department of Mathematics (PG)

Value-Added Course

**VACMAAD22 - APPLICATION OF DATA ANALYTICS USING ADVANCED EXCEL,
R AND TABLEAU**

Code	Title of The Paper	Hours
VACMAAD22	Application of Data Analytics using Advanced Excel, R and Tableau	30

Course Objectives

The course will develop the skills necessary to do Data Analytics (Bivariate and Multivariate Techniques also real time projects along with case study). Augmented with case studies, lectures, and research notes, course aims to deepen the understanding of methods for collecting, analysing, and summarizing data pertinent to solving Data problems.

Course Learning Outcomes

- Students can do their final year projects on their own. Students can build their carrier into Data Scientist and Analytics stream.
- Students can become Freelancer by doing Data Analyst or Analytics projects to outsider, this is applicable only if students who are really interested in this stream.

Course Syllabus

Unit I: Data Analytics Introduction and Data Analytics Using Advanced MS Excel – Hands-On (10 Hours)

1.1 Data Analytics Introduction - Data Analytics Brief - Data Statistics - Descriptive and Inferential - Data Visualization - Data Analytics Algorithm in Detail - Supervised Learning Algorithm - Unsupervised Learning Algorithm - Reinforcement Learning Algorithm - Data Analytics Importance and Key challenges - Life of Data Analytics Expert - Data Analytics Application.

1.2 Descriptive Statistics using Advanced Excel: Central Tendency - Mean - Median, Mode, Percentiles and Quartiles - Dispersion - Variance, Standard Deviation and Range - Interquartile Range - Numerical Measures -Detecting Outliers. Data Visualisation Using Excel: Graphs - Charts - create a chart and change chart type - switch row/column and chart title - legend

position and data labels - column chart, line chart, pie chart and bar chart - area chart, scatter chart, trend line.

1.3 Correlation: Correlation Analysis - Formulation of Correlation Matrix - Mapping Correlation concept with Real Time Example. Regression - Linear Regression Analysis - Formulation of Regression Model - Bivariate Regression - Multiple Regressions - Conducting Multiple Regression - Mapping Bivariate Regression with Real Time Example.

1.4 Pivot Table and Pivot Chart: Inserting a PivotTable - Choosing Fields and Sort Data - Two-Dimensional Pivot Table - Data Table -insert a table and sort a table - filter a table and total row. Pivot Chart - Group Pivot Table Items - Multi - level Pivot Table - Frequency Distribution - Pivot Chart and Slicers - Update Pivot Table - Calculated Field/Item - T-Test - Parametric Test - T –test (One and Two - Sample - Z - test (One and Two Sample) - F – Test (One and Two Sample).

1.5 Statistical Functions: Average function and average if function - Median, mode and standard deviation - Min function, max function, large and small function - Negative numbers to zero, random numbers and rank - Percentiles and quartiles forecast and trend. Logical Function - If function, and function and or function - nested if and roll the dice.

1.6 Lookup Function: Vlookup function and Hlookup functions - match and index and choose, text rates and offset - left lookup and two-way lookup, locate maximum value and indirect - Formula Error - ##### error, #name? Error and #value! Error - #div/0! Error and #ref! Error, iferror and iserror - Circular reference and formula auditing and floating-point errors.

1.7 Data Validation and Data Table: create data validation rule and input message and error alert - data validation result and rejection of invalid dates - budget limit and prevent duplicate entries - product codes and drop-down list, dependent drop-down list. Compatibility Function - Scenario Manager - Create Scenario using Scenario Manager - Using the Scenario Summary - Using Goal seek Analysis - Data Tables - Quadratic Equation - Using a Two Input Data Table. Data Table - insert a table and sort a table - filter a table and total row - structured references and table styles.

1.8 Solver- Load Solver Add-In: Formulate the Model - Trial and Error - Solve the Model - Transportation Problem - Assignment Problem - Shortest path problem - Maximum Flow Problem - Capital Investment - Sensitivity Analysis.

Unit II: Data Visualisation Using Tableau– Hands-On

(10 Hours)

2.1 Tableau Basics: Your First Bar chart - The Data Challenge - Who Gets the Annual Bonus - Connecting Tableau to a Data File - CSV File - Navigating Tableau - Creating Calculated Fields - Adding Colors - Adding Labels and Formatting - Exporting Your Worksheet.

2.2 Time series, Aggregation, and Filters: Working with Data Extracts in Tableau - Working with Time Series - Understanding Aggregation, Granularity, and Level of Detail - Creating an Area Chart & Learning about Highlighting - Adding a Filter and Quick Filter.

2.3 Tableau - Maps, Scatterplots, and Your First Dashboard: Joining Data in Tableau - Creating a Map, Working with Hierarchies - Creating a Scatter Plot, Applying Filters to Multiple Worksheets - Let's Create our First Dashboard! - Adding an Interactive Action - Filter - Adding an Interactive Action – Highlighting.

2.4 Joining and Blending Data, PLUS: Dual Axis Charts: Understanding how LEFT, RIGHT, INNER, and OUTER Joins Work - Joins with Duplicate Values - Joining on Multiple Fields – The Showdown: Joining Data vs. Blending Data in Tableau - Data Blending in Tableau and Dual Axis Chart - Creating Calculated Fields in a Blend (Advanced Topic) - Section Recap".

2.5 Table Calculations, Advanced Dashboards, Storytelling: Downloading the Dataset and Connecting to Tableau - Mapping: how to Set Geographical Roles - Creating Table Calculations for Gender - Creating Bins and Distributions for Age - Leveraging the Power of Parameters - How to Create a Tree Map Chart - Creating a Customer Segmentation Dashboard - Advanced Dashboard Interactivity - Analyzing the Customer Segmentation Dashboard - Creating a Storyline".

Unit III: Data Science Using Python - Hands-on

(10 Hours)

3.1 Introduction to R: What is R? And Why R? - Different “flavors” of R-Installing R Studio Desktop-Understanding R Studio-Installing Packages and Libraries in R Studio-Setting Your Work Directory.

3.2 R Implementation: Data Variables |Data Types |Operators |Keywords |Exceptions-Functions |R Data Structures |Vectors and Lists |Strings and Matrices |Arrays and Factors |Data Frames |Packages |R Interfaces |R- CSV files Read and Write and analyze the data |R- Excel files Read and Write and analyze the data.

3.3 Data Visualization: Line Plots |Bar Charts |Pie Chart and Histogram |Scatter Plots and Parallel Coordinates|Advanced Plotting|Exporting Plots and Other Plotting Packages.

3.4 Predictive Customer Analytics: Formulation of Regression Model|Bivariate Regression|Statistics Associated with Bivariate Regression Analysis|Conducting Bivariate

Regression Analysis|Multiple Regressions|Conducting Multiple Regression|Mapping Bivariate Regression with Real Time Example.

3.5 Bank Loan Modelling: Logistic Function| Single Predictor Model| Determine Logistic Cut off|Estimated Equation for Logistic Regression.

3.6 Time Series Analysis and Forecasting: Introduction to Time Series Analysis - Trend Line Analysis, Pattern Identification - Time Series Smoothing Methods - Time Series Prediction Analysis - Python - Simple Predictive Analysis - Linear Predictive Analysis - Implementation of Predictive Analysis Using Python - Multiple Predictive Model using Python - What is Multiple Predictive Model? - Building the Multiple Predictive Model using Python - Assumption of Multiple Predictive Model.

3.7 Python Correlation Analysis: What is Correlation Analysis? - Correlation Coefficient and Hypothesis Testing - Product Movement Correlation, Partial Correlation and Non Metric Correlation.

Teaching Methodology:

- Case Study Discussion
- Project Problem Solving
- Experiential Learning

Delivery Mode:

- Blended Learning – Both Online and offline

Course Reference material:

- **Data Analytics Using Advanced Excel** by Cory Lesmeister and Dr. Sunil Kumar Chinnamgari
- **R Software Machine Learning Projects** by Dr. Sunil Kumar Chinnamgari
- **Tableau 10 Complete Reference:** Transform your Data with rich data visualizations and interactive dashboards with Tableau by Joshua N. Milligan (Author), Tristan Guillevin (Author).
- **Learning Tableau 2019:** Tools for Data Intelligence, data prep, and visual analytics, 3rd Edition Paperback – March 27, 2019 by Joshua N. Milligan (Author).

Assessment Methods:

- Case study problem solving
- MCQ

Department of Mathematics (PG)

Value-Added Course

VACMASS22 - LEARNING OPEN-SOURCE SIMULATION SOFTWARE – SCILAB

Code	Title of The Paper	Hours
VACMASS22	Learning Open-Source Simulation Software - SCILAB	30

Course Objectives

1. To introduce *SCILAB* which is a free open-source scientific software package alternative to MATLAB.
2. To know the benefits of SCILAB.
3. To develop the knowledge for solving numerical problems through *SCILAB*.
4. To learn the SCILAB tool XCOS which is a graphical editor to design hybrid dynamical systems models.
5. To acquire knowledge to use *SCILAB* software package in a Signal Processing and Python context.

Course Learning Outcomes

The Learners will be able to

1. Understand and apply SCILAB as computational tool.
2. Perform mathematical Modelling in SCILAB.
3. Develop programs in SCILAB.
4. Evaluate, analyze and plot results using SCILAB.
5. Solve Non-linear, linear equations and ODE using SCILAB.
6. Understand the concepts of DSP and Python with SCILAB programs.
7. Develop SCILAB Toolbox for calling functions.

Course Syllabus

Unit I: Introduction to SCILAB

(6 Hours)

Introduction to SCILAB and its benefits - Self learning of SCILAB through Spoken Tutorials - The amazing resource of SCILAB Textbook Companion - SCILAB Lab migration, Toolboxes and Forums - Installing – Expressions - Vector Operations - Matrix Operations - Conditional Branching - Iteration - Scripts and Functions.

Unit II: 2D Visualization and Introduction to SCILAB XCOS (6 Hours)

Plotting 2D graphs - XCOS Introduction - File handling - User Defined Input and Output - Integration - Solving Non-linear Equations.

Unit III: Solving Linear Equations and ODE using SCILAB (6 Hours)

Linear equations Gaussian Methods - Linear equations Iterative Methods - Interpolation - ODE Euler methods - ODE Applications - Optimization Using Karmarkar Function.

Unit IV: Signal Processing with SCILAB (6 Hours)

Digital Signal Processing - Control systems - Discrete systems - Calling User Defined Functions in XCOS - Simulating a PID controller using XCOS - Developing SCILAB Toolbox for calling external C libraries.

Unit V: Python Interaction Mechanism in SCILAB (6 Hours)

Developing SCILAB Toolbox for calling Python and its functions - Interactive Simulation in XCOS using slider - User-defined variables in XCOS - Loading and saving data in XCOS - Conditional operations in XCOS - Super Blocks in XCOS.

Course Content: E-Resources

1. <https://spoken-tutorial.org/watch/Scilab/Introduction+to+Scilab+and+its+benefits/English/>
2. <https://spoken-tutorial.org/watch/Scilab/Self+learning+of+Scilab+through+Spoken+Tutorials/English/>
3. <https://spoken-tutorial.org/watch/Scilab/The+amazing+resource+of+Scilab+Textbook+Companion/English/>
4. <https://spoken-tutorial.org/watch/Scilab/Scilab+Lab+migration,+Toolboxes+and+Forums/English/>
5. <https://spoken-tutorial.org/watch/Scilab/Installing/English/>
6. <https://spoken-tutorial.org/watch/Scilab/Getting+Started/English/>

7. <https://spoken-tutorial.org/watch/Scilab/Vector+Operations/English/>
8. <https://spoken-tutorial.org/watch/Scilab/Matrix+Operations/English/>
9. <https://spoken-tutorial.org/watch/Scilab/Conditional+Branching/English/>
10. <https://spoken-tutorial.org/watch/Scilab/Iteration/English/>
11. <https://spoken-tutorial.org/watch/Scilab/Scripts+and+Functions/English/>
12. <https://spoken-tutorial.org/watch/Scilab/Plotting+2D+graphs/English/>
13. <https://spoken-tutorial.org/watch/Scilab/Xcos+Introduction/English/>
14. <https://spoken-tutorial.org/watch/Scilab/File+handling/English/>
15. <https://spoken-tutorial.org/watch/Scilab/User+Defined+Input+and+Output/English/>
16. <https://spoken-tutorial.org/watch/Scilab/Integration/English/>
17. <https://spoken-tutorial.org/watch/Scilab/Solving+Non+linear+Equations/English/>
18. <https://spoken-tutorial.org/watch/Scilab/Linear+equations+Gaussian+Methods/English/>
19. <https://spoken-tutorial.org/watch/Scilab/Linear+equations+Iterative+Methods/English/>
20. <https://spoken-tutorial.org/watch/Scilab/Interpolation/English/>
21. <https://spoken-tutorial.org/watch/Scilab/ODE+Euler+methods/English/>
22. <https://spoken-tutorial.org/watch/Scilab/ODE+Applications/English/>
23. <https://spoken-tutorial.org/watch/Scilab/Optimization+Using+Karmarkar+Function/English/>
24. <https://spoken-tutorial.org/watch/Scilab/Digital+Signal+Processing/English/>
25. <https://spoken-tutorial.org/watch/Scilab/Control+systems/English/>
26. <https://spoken-tutorial.org/watch/Scilab/Discrete+systems/English/>
27. <https://spoken-tutorial.org/watch/Scilab/Calling+User+Defined+Functions+in+XCOS/English/>

28. <https://spoken-tutorial.org/watch/Scilab/Simulating+a+PID+controller+using+XCOS/English/>
29. <https://spoken-tutorial.org/watch/Scilab/Developing+Scilab+Toolbox+for+calling+external+C+libraries/English/>
30. <https://spoken-tutorial.org/watch/Scilab/Developing+Scilab+Toolbox+for+calling+Python+and+its+functions/English/>
31. <https://spoken-tutorial.org/watch/Scilab/Interactive+Simulation+in+Xcos+using+slider/English/>
32. <https://spoken-tutorial.org/watch/Scilab/User-defined+variables+in+Xcos/English/>
33. <https://spoken-tutorial.org/watch/Scilab/Loading+and+saving+data+in+Xcos/English/>
34. <https://spoken-tutorial.org/watch/Scilab/Conditional+operations+in+Xcos/English/>
35. <https://spoken-tutorial.org/watch/Scilab/Super+Blocks+in+Xcos/English/>

Learning Methodology:

- Audio-Video tutorial of STP-IIT Bombay.
- Self-paced, E-learning method.

Assessment Method:

The Value-added course certificate of Auxilium College will be given to the students who receive the Certificate for Completion of Training from Spoken Tutorial-IIT Bombay (Spoken Tutorial Project (STP) is a project of the National Mission on Education through Information and Communication Technology (NMEICT) funded by the Ministry of Education (MoE), Govt. of India. It is endorsed by AICTE and UGC, also comes under Pandit Madan Mohan Malviya National Mission on Teachers and Teaching (PMMMNMTT) and Swayam Platform).

The pass percentage for the Online test conducted by Spoken Tutorial is 40%.

Department of Mathematics

Value-Added Course

VACMAFD22 - FUNDAMENTALS OF DATA ANALYTICS

Code	Title of The Paper	Hours
VACMAFD22	Fundamentals of Data Analytics	30

Course Learning Outcomes:

To help the students rekindle their critical thinking and widen their knowledge of data analytics.

Unit 1 - Working with Data (6 hours)

Introduction - Working with Data - The OSEMN Framework - Obtaining Data - Scrubbing Data - Exploring Data - Modelling Data -Interpreting Data

Unit 2 - Python for Data Analysis (6 hours)

Introduction - Python for Data Analysis - Data and Data Formats - Myths of Programming

Unit 3 - Variables and data Structures in Python (6 hours)

Introduction to Python: Variables Part 1 - Introduction to Python: Variables Part 2
Introduction to Python: Variables Part 3 - Introduction to Python: Data Structures

Unit 4 - Conditional Statements and Functions in Python (6 hours)

Introduction to Python: Conditional Statements – Iteration - A Simple Marketing Analysis with Example - Functions in Python - Built In Functions - Function Writing

Unit 5 - Data Cleaning and Processing (6 hours)

Introduction: Data Cleaning and Processing - Working with Data in Spread sheets - Number - Formats and Sorting in Google Sheets - Filtering Data with Google Sheets - Functions in Google Sheets - Data Visualization in Google Sheets

Book for Study:

Rudolf Mathar, Gholamreza Alirezaei, Emilio Balda, Arash Behboodi - Fundamentals of Data Analytics _ With a View to Machine Learning-Springer International Publishing_Springer (2020)

Book for Reference:

LjubomirPerkovic, “Introduction to computing using Python”, 2nd Edition, John Wiley & Sons, 2012.

ASSESSMENT METHOD

A Practical Examination of two hours duration for 50 marks will be conducted at the end of the course.

Department of Social Work

Value-Added Course

VACSWFD22 – FASHION DESIGNING

Code	Title of The Paper	Hours
VACSWFD22	Fashion Designing	30

Course Learning Outcomes:

At end of the course the student should be able to:

1. Produce their own marketable products
2. Unleash their creativity and generate income
3. Convert Waste to wealth

Engross in Social Responsibility and Community Engagement

Unit I: Textile Industry based Product & Selecting the Nature's Block (8 Hours)

The basics of the fabrics, selecting the base materials, Characteristics of the process, the spectrum of Nature's Block available, Determination of Nature's block, choosing of the block, Waste to Wealth Principle.

Unit II: Product development and showcasing and Goodie Based on Paper and Pulp industry (9 Hours)

Ecofriendly Bio based Printing on Fabric using the Nature's Block, Artefact development, showcasing the merchandisable product, Need of Goodies, Behavioral and neural science behind Goodies, Cases studies on Goodies, Effect of Goodie on relationship building, reducing stress and improving moods, knowing the process of paper and pulp industry

Unit III: Biological and organic waste materials as the raw material (4 Hours)

Fundamentals of color, Coloring agents, natural dyes, Mordants, Biological or organic waste material into pressed merchandisable flower greeting cards.

Unit IV: Marketing strategies (4 Hours)

Strategic planning - SWOT analysis, Business plan preparation -Business Model Canvas (BMC), Training and Development. Stage gate approach to product development, Return on Investment, Commercialization, stages of commercialization of products

Unit V: Business Management Skills (5 Hours)

Understanding Marketing, Marketing and Product development, Capturing and connecting customers, Building strong Bands, and creating value. E-business and E- marketing, Business to Business Marketing, Consumer Marketing. Collaboration agreement, Strategic collaboration, Nature of Operation and Material Management, Operation and Material Management Costs, Distribution and sale of products, outsourcing

Department of Botany

Value-Added Course

VACBTES22 - ENTREPRENEURIAL SKILLS IN BOTANY

Code	Title of The Paper	Hours
VACBTES22	Entrepreneurial Skills In Botany	30

Unit I: Nursery and Garden: (4 Hours)

Definition, objectives, and scope of the nursery, planning, and seasonal activities - Planting - direct seedling and transplants, economy of the nursery.

Unit II: Organic Manure Production: (4 Hours)

Introduction, Composting, production of compost and constitution of compost, Factors affecting decomposition. Vermiculture and vermicomposting: Definition, Advantages, Role of Earthworms in soil fertility. Importance of Organic Manure.

Unit III: Vegetative Propagation of Horticulture plants: (4 Hours)

Introduction, Economic importance, and classification of horticulture crops. Types and Methods of Vegetative propagation: Cutting, Layering, Grafting, and Budding. Propagation of plants for ornamental purposes.

Unit IV: Kitchen and Terrace Gardening: (4 Hours)

Introduction, Garden and its types, Tools and equipment required for the garden preparation, Vegetable garden, kitchen garden, Plan of Terrace Garden, Advantages of Terrace gardening.

Unit V: Herbal Products: (4 Hours)

Preparation of Herbal hair oil, herbal face pack, herbal shampoo, herbal toothpaste, herbal soap, herbal food products

Student activity: (10 Hours)

Preparation of Organic manure /herbal products, Visit the Nursery and Horticultural department.

Suggested Readings

1. Bose T.K. & Mukherjee, D. 1972, Gardening in India, Oxford & IBH Publishing Co., New Delhi.
2. Sandhu, M.K. 1989. Plant Propagation, Wile Eastern Ltd., Bangalore, Karnataka.
3. Kumar, N. 1997. Introduction to Horticulture, Rajalakshmi Publications, Nagercoil.
4. Pande, H. 2015. Herbal Cosmetics - Asia Pacific Business press, New Delhi.

Department of Business Administration (UG)

Value-Added Course

VACBADM22 - DIGITAL MARKETING

Code	Title of The Paper	Hours
VACBADM22	Digital Marketing	30

Course Learning Outcomes:

1. To give an in-depth understanding and advanced knowledge of the digital marketing domains.
2. Impart skills to apply digital marketing tactics for achieving business objectives.
3. Empower participants to analyze and communicate public opinion of a brand or a company to stakeholders.
4. Provide a strategic framework to assess and implement various digital marketing practices.

Unit I - Introduction

Introduction to Internet Marketing - Overview of Industry - History of Internet Marketing - 2017 Trends - Setting Goals and defining Metrics - Social Media Marketing - An introduction to platforms and platform personality - Choosing social platforms for marketing - Facebook Marketing – best practices & case examples - Twitter Marketing – best practices & case examples - LinkedIn Marketing – best practices & case examples - Blog / Communities - – best practices & case examples

Unit II - Search Engine Optimization

SEO: Definition, history and evolution - SEO Trends - How does Search Engine work? - Basics of on page and off page SEO - SERP Analysis

Unit III - Google Analytics

Understanding various parameters under Google Analytics - How to get insights - Advantage of integrating website with Google Analytics -Influencer Marketing - What is influencer marketing - How to choose the right influencer - Tools to measure degree of influence by an influencer - Measurement of influencer marketing campaign

Unit IV - Mobile Marketing

Overview on Mobile Marketing - Introduction to Mobile Marketing - Understanding importance of User Interface and User experience while using Mobile - Types of mobile ads - Mobile marketing strategies

Unit V - Online Reputation Management

Online Reputation Management - Introduction to ORM - Trends in ORM - How ORM could be used to develop meaningful content - What are various Tools for online listening and how to use them.

Teaching Methodology

- Case Study Discussion

- Project Problem Solving
- Experiential Learning

Delivery Mode

- Blended Learning – Both Online and offline

Text Books

1. Chaffey, D., & Smith, P. R. , Digital marketing excellence: planning, optimizing and integrating online marketing. Taylor & Francis. (2017).
2. Dodson, I. , The art of digital marketing: the definitive guide to creating strategic, targeted, and measurable online campaigns. John Wiley & Sons. (2016).
3. Kaufman, I., & Horton, C. , Digital marketing: Integrating strategy and tactics with values, a guidebook for executives, managers, and students. (2014).

Reference Books

1. Routledge. Royle, J., & Laing, A ,The digital marketing skills gap: Developing a Digital Marketer Model for the communication industries. International Journal of Information Management. (2014).
2. Stokes, R., E-Marketing: The essential guide to digital marketing. Quirk e Marketing (2011).

E-resources

- <https://www.webmarketingacademy.in>
<https://www.digitalmarketer.com>

Department of Business Administration (PG)

Value-Added Course

VACBAIP22 - INTELLECTUAL PROPERTY RIGHTS

Code	Title of The Paper	Hours
VACBAIP22	Intellectual Property Rights	30

Course Learning Outcomes:

1. To introduce the fundamental aspects of Intellectual property Rights.
2. To disseminate knowledge on patents, patent regime in India.
3. To communicate the basic understanding on copyrights and its related rights and registration aspects.
4. To initiate the skill on trademarks, registration aspects and Geographical Indication (GI) □
5. To be aware on the current trends in IPR and Govt. steps in fostering IPR.

Unit I - Introduction to IPR

Definition- History of IPR - Meaning of Property- Intellectual Property-Intellectual Property Rights- Types of intellectual property- Importance of Intellectual Property Rights- Agencies responsible for Intellectual Property Registration- TRIPS.

Unit II - Trade Mark

Definition - Purpose and Function of Trademarks- Types- Acquisition of Trade Mark Rights- Laws related to Trade Mark- Selecting and Evaluating Trademark- Registration of Trademarks - Trade Secret and its Protection.

Unit III - Patent

Meaning- Criteria for Obtaining Patents - Novelty - Inventive step - Utility - Non patentable Inventions - Procedure for Registration - Term of Patent - Rights of Patentee - Basic concept of Compulsory License and Government use of Patent.

Unit IV - Copyrights & Geographical Indication

Definition - Fundamentals of Copyright law- Copyright Board and its Functions - Originality of Material- Right of Reproduction- Right to perform the Work Publicly- Copyright Ownership Issues- Notice of Copyright – Infringement of Copyrights – Meaning of GI-Features-Registration Procedure.

Unit V - Current trends in IPR

Meaning- Application - Registration - Procedure-New development of Intellectual property: New developments in Trade Mark Law- Copyright Law- Patent Law- International Overview on Intellectual Property- International Trade Mark Law- Copyright Law- Patent Law.

Teaching Methodology

- Case Study Discussion

- Project Problem Solving
- Experiential Learning

Delivery Mode

- Blended Learning – Both Online and offline

Text Books

1. Nithyananda, K V. (2019). Intellectual Property Rights: Protection and Management. India, IN: Cengage Learning India Private Limited.
2. Neeraj, P., & Khusdeep, D. (2014). Intellectual Property Rights. India, IN: PHI learning Private Limited.

Reference Books

1. Ahuja, V K. (2017). Law relating to Intellectual Property Rights. India, IN: Lexis Nexis.
2. Rocque Reynolds, Natalie P. Stoianoff, Alpana Roy (2015) Intellectual Property: Text and Essential Cases , Federation Press.

E-resources

- <http://www.bdu.ac.in/cells/ipr/docs/ipr-eng-ebook.pdf>
- https://www.wipo.int/edocs/pubdocs/en/intproperty/489/wipo_pub_489.pdf

Department of Business Administration (PG)
Value-Added Course
VACBASD22 - SUSTAINABLE DEVELOPMENT GOALS

Code	Title of The Paper	Hours
VACBASD22	Sustainable Development Goals	30

Global Understanding for Sustainable Development Goals (Promoting Social Business and Entrepreneurship)

Course Learning Outcomes:

1. Mainstreaming students to involve in the Post-2015 Development Agenda, engage and contribute towards the success of Sustainable Development Goals (SDGs).
2. Providing students with an opportunity to participate in the SDG & Business interventions.
3. To initiate and participate in Youth Leadership and Youth Work projects
4. Providing workspace for youth to frame, and exhibit their skills and mentoring them with various leadership qualities including the spirit of social entrepreneurship.

Unit I - Introduction

Introduction – Sustainable Development Goals – History – Agenda – Objectives – Classification of Goals – Factors influencing contribution towards SDGs.

Unit II - SDG 1, 2, 4

SDG 1, 2, 4 – No poverty, Zero Hunger & Quality Education – SDG 3 – Good Health & Wellbeing – SDG 5, 10 – Gender Equality & Reduced Inequalities – Experiential learning and Self & Social immersion – Entrepreneurs Talk series.

Unit III - SDG 6, 13, 14, 15

SDG 6, 13, 14, 15 – Clean water and sanitation, Climate Action, Life Below Water & Life on Land – SDG 7, 12 – Affordable and clean energy & Responsible consumption and production – Experiential learning and Self & Social immersion – Entrepreneurs Talk series.

Unit IV - SDG 8, 9

SDG 8, 9 – Decent Work and Economic Growth, Industry, Innovation, and Infrastructure & Sustainable cities and communities – SDG 16, 17 - Peace, Justice and Strong Institutions & Partners for the goals. Experiential learning and Self & Social immersion – Entrepreneurs Talk series.

Unit V- Social Entrepreneurship

Social Entrepreneurship – How to promote – Media management – Social Innovation Summit & Exhibition – Project submission and evaluation – Project pitching & presentation.

Teaching Methodology

- Brainstorming
- Experiential Learning, Field Visits & Projects
- Storytelling
- Group Discussion
- PPT presentation
- Paper presentation

Delivery Mode

- Blended Learning – Both Online and offline

Text Books

1. Yoko Mochizuki and Eleni Christodoulou, Textbooks for Sustainable Development - A Guide to Embedding, UNESCO MGIE (2017)
2. Paula Caballero and Patti Londoño , Redefining Development: The Extraordinary Genesis of the Sustainable Development Goals (The Policy and Practice of Governance) (2022)

Reference Books

1. Paul Nelson - Global Development and Human Rights: The Sustainable Development Goals and Beyond (UTP Insights) (2022)
2. Wendy Steele and Lauren Rickards ,The Sustainable Development Goals in Higher Education: A Transformative Agenda? (2021)
3. Evan Thomas, The Global Engineers: Building a Safe and Equitable World Together (Sustainable Development Goals Series) (2020)

E-resources

- <https://sdgacademy.org/>
- <https://www.un.org/sustainabledevelopment/student-resources/>
- <https://www.un.org/sustainabledevelopment/education/>
- <https://www.unsdglearn.org/courses/climate-change-the-science-and-global-impact/>
- 5. <https://en.unesco.org/themes/education/sdgs/material>

Department of Business Administration (PG)
Value-Added Course
VACBABA22 - APPLICATION OF BUSINESS ANALYTICS USING
ADVANCED EXCEL, PYTHON AND TABLEAU

Code	Title of The Paper	Hours
VACBABA22	Application Of Business Analytics Using Advanced Excel, Python And Tableau	30

Course Learning Outcomes:

1. To develop the skills necessary to do Business Analytics (Bivariate and Multivariate Techniques also real time projects along with case study).
2. To deepen the understanding of methods for collecting, analysing, and summarizing data pertinent to solving Business problems.

Unit I - Business Analytics Introduction

Business Analytics Introduction - Business Analytics Introduction- Business Analytics Brief - Data Statistics - Descriptive and Inferential - Data Visualization - Business Analytics Algorithm in Detail - Supervised Learning Algorithm - Unsupervised Learning Algorithm - Reinforcement Learning Algorithm - Business Analytics Importance and Key challenges - Life of Business Analytics Expert - Business Analytics Application.

Unit II - Data Analytics Using Advanced MS Excel – Hands-On

Descriptive Statistics using Advanced Excel:- Central Tendency - Mean - Median, Mode, Percentiles and Quartiles - Dispersion - Variance, Standard Deviation and Range - Interquartile Range - Numerical Measures -Detecting Outliers. Data Visualisation Using Excel: Graphs - Charts - create a chart and change chart type - switch row/column and chart title - legend position and data labels - column chart, line chart, pie chart and bar chart - area chart, scatter chart, trend line.

Correlation - Correlation Analysis - Formulation of Correlation Matrix - Mapping Correlation concept with Real Time Example. Regression - Linear Regression Analysis - Formulation of Regression Model - Bivariate Regression - Multiple Regressions - Conducting Multiple Regression - Mapping Bivariate Regression with Real Time Example.

Pivot Table and Pivot Chart -Inserting a PivotTable - Choosing Fields and Sort Data - Two Dimensional Pivot Table - Data Table -insert a table and sort a table - filter a table and total row. Pivot Chart - Group Pivot Table Items - Multi - level Pivot Table - Frequency Distribution - Pivot Chart and Slicers - Update Pivot Table - Calculated Field/Item - T-Test - Parametric Test - T –test (One and Two - Sample - Z - test (One and Two Sample) - F – Test (One and Two Sample).

Statistical Functions - Average function and average if function - Median, mode and standard deviation - Min function, max function, large and small function - Negative numbers to zero, random numbers and rank - Percentiles and quartiles forecast and trend. Logical Function - If function, and function and or function - nested if and roll the dice.

Lookup Function - Vlookup function and Hlookup functions - match and index and choose, text rates and offset - left lookup and two way lookup, locate maximum value and indirect - Formula Error - ##### error, #name? Error and #value! Error - #div/0! Error and #ref! Error, iferror and iserror - Circular reference and formula auditing and floating point errors.

Data Validation and Data Table - create data validation rule and input message and error alert - data validation result and rejection of invalid dates - budget limit and prevent duplicate entries - product codes and drop down list, dependent drop down list. Compatibility Function - Scenario Manager - Create Scenario using Scenario Manager - Using the Scenario Summary - Using Goal seek Analysis - Data Tables - Quadratic Equation - Using a Two Input Data Table. Data Table - insert a table and sort a table - filter a table and total row - structured references and table styles.

Solver- Load Solver Add-In - Formulate the Model - Trial and Error - Solve the Model - Transportation Problem - Assignment Problem - Shortest path problem - Maximum Flow Problem - Capital Investment - Sensitivity Analysis

Unit III - Data Visualisation Using Tableau– Hands-On

Tableau Basics: Your First Bar chart - The Business Challenge - Who Gets the Annual Bonus - Connecting Tableau to a Data File - CSV File - Navigating Tableau - Creating Calculated Fields - Adding Colors - Adding Labels and Formatting - Exporting Your Worksheet.

Time series, Aggregation, and Filters - Working with Data Extracts in Tableau - Working with Time Series - Understanding Aggregation, Granularity, and Level of Detail - Creating an Area Chart & Learning about Highlighting - Adding a Filter and Quick Filter.

Tableau - Maps, Scatterplots, and Your First Dashboard - Joining Data in Tableau - Creating a Map, Working with Hierarchies - Creating a Scatter Plot, Applying Filters to Multiple Worksheets - Let's Create our First Dashboard! - Adding an Interactive Action - Filter - Adding an Interactive Action – Highlighting.

Joining and Blending Data, PLUS: Dual Axis Charts - Understanding how LEFT, RIGHT, INNER, and OUTER Joins Work - Joins with Duplicate Values - Joining on Multiple Fields – The Showdown: Joining Data vs. Blending Data in Tableau - Data Blending in Tableau and Dual Axis Chart - Creating Calculated Fields in a Blend (Advanced Topic) - Section Recap".

Table Calculations, Advanced Dashboards, Storytelling - Downloading the Dataset and Connecting to Tableau - Mapping: how to Set Geographical Roles - Creating Table Calculations for Gender - Creating Bins and Distributions for Age - Leveraging the Power of Parameters - How to Create a Tree Map Chart - Creating a Customer

Segmentation Dashboard - Advanced Dashboard Interactivity - Analyzing the Customer Segmentation Dashboard - Creating a Storyline"

Unit IV - Data Science Using Python - Hands-on

Python Introduction - IDE and Python Packages - Python Introduction - Python IDE - Spyder, Jupiter and Notebook - Numpy Packages - Pandas Packages - Matplotlib Packages - Scipy Packages - Sklearn Packages
Python Data Types - Dictionary, List and Set and Variable Declaration - String Declaration - Tuple Declaration - Python Programming - Dictionary Declaration - List Declaration - Set Declaration - Python Data Types.

Numpy Packages - Array Handling and Manipulation - Declaration of Array - Universal Function of Numpy - Binary Functions of Numpy - Logical Functions of Numpy - Statistical Functions of Numpy.

Unit V - Data Science Using Python - Hands-on

Pandas Packages - Data frame and Loading Excel, CSV File - Pandas Packages - Accessing File Processing - Merging the Data frame - Joins - Inner, Outer, Left and Right - handling the Null values - Handling the Duplicates.

Matplotlib Packages - Line graph and Visualisation - Introduction to Matplotlib packages - Representation of Line Graph - Representation of Multi Line Graph - Including the Legends - Histogram, Scatter Diagram, Box Plot and Bar Graph Representation of Histogram - Representation of Scatter Diagram - Representation of Box Plot - Representation of Bar Graph - Area Chart, Dual Axis, Array reshaping, reverse matrix analysis Representation of Area Chart - Representation of Dual Axis.

Python - Time Series Analysis and Forecasting - Introduction to Time Series Analysis - Trend Line Analysis, Pattern Identification - Time Series Smoothing Methods - Time Series Prediction Analysis - Python - Simple Predictive Analysis - Linear Predictive Analysis - Implementation of Predictive Analysis Using Python - Multiple Predictive Model using Python - What is Multiple Predictive Model? - Building the Multiple Predictive Model using Python - Assumption of Multiple Predictive Model. Python Correlation Analysis - What is Correlation Analysis? - Correlation Coefficient and Hypothesis Testing - Product Movement Correlation, Partial Correlation and Non Metric Correlation

Teaching Methodology

- Case Study Discussion
- Project Problem Solving
- Experiential Learning

Delivery Mode

- Blended Learning – Both Online and offline

Text Books

1. Data Analytics Using Advanced Excel by Cory Lesmeister and Dr. Sunil Kumar Chinnamgari
2. Tableau 10 Complete Reference: Transform your business with rich data visualizations and interactive dashboards with Tableau by Joshua N. Milligan (Author), Tristan Guillevin (Author)
3. Python Crash Course: A Hands-On, Project-Based Introduction to Programming by Eric Matthes

Reference Books

1. Learning Tableau 2019: Tools for Business Intelligence, data prep, and visual analytics, 3rd Edition , 2019 by Joshua N. Milligan (Author)
2. Introduction to Machine Learning with Python: A Guide for Data -2016 by Andreas C. Mueller (Author), Sarah Guido (Author)
3. Python Machine Learning Projects by Dr. Sunil Kumar Chinnamgari

E-resources

- <https://analyticsindiamag.com>
<https://towardsdatascience.com>

Department of Computer Application
Value-Added Course
VACCACP22 – CLASS BASED PROGRAMMING

Code	Title of The Paper	Hours
VACCACP22	Class Based Programming	30

Course Learning Outcomes:

- To understand the basic concepts of Object and Classes, Pointers, Functions, and File Operations.
- To gain knowledge about various types of data along with the structures and its algorithms.

Unit I:

Advanced Classes and Object Oriented programming: Objects- Classes – Inheritance – Reusability – Creating New Data types – Polymorphism and Overloading - Recursion: Need of Recursion – Properties of Recursion – Recursion Functions.

Unit II:

Virtual functions and Polymorphism: Pointers to Objects – this Pointer – Pointers to Derived Classes – Virtual Functions – Pure Virtual Functions. - Exceptions, Templates, and Standard Template Library.

Unit III:

Linked Lists: Representation in Memory - Traversing a Linked List - Searching - Insertion and Deletion - Two way Lists - Application Stacks - Array Representation - Arithmetic Expressions- Queues - Priority Queues.

Unit IV:

Trees - Binary Trees - Representation in Memory - Tree Traversals - Binary Search Trees - Searching Inserting and Deleting. Mapping Console I/O Operations - Files: File streams – File operations – File pointers – Command Line Arguments.

Unit V:

1. Program to implement String Manipulations.
2. Program to implement Recursion.
3. Program to implement Classes and Objects.
4. Program to implement Virtual Functions and Polymorphism.
5. Program to implement using Stack.
6. Program to implement using Queue.
7. Program to implement using Searching Techniques.
8. Program to implement File concepts.

Books for Study:

1. Balagurusamy E., “Object Oriented Programming with C++”, Sixth Edition, Tata McGraw Hill Publication, 2014.
2. Seymour Lipschutz, “Data Structures: Schaum’s Outline Series”, Revised Edition, McGraw Hill Publication, 2011.

Books for Reference:

1. Herbert Schildt, “The complete Reference C++”, Edition IV, Tata McGraw Hill Publication, 2015.
2. Yashawant P. Kanetkar, ” Let Us C++”, Edition II, BPB Publication, 2003.
3. Ellis Horowitz,Sartaj Sahni,Susan Andeson Freed, “Fundamentals of Data Structures in C”, 2nd Edition, Universities Press Pvt Ltd, ,2018
4. Alfred V.Aho, John E.Hopcroft, Jeffrey D.Ullman , “Data Structures and Algorithms” , 1st Edition, Pearson Education, 2004.

Open Educational Resources (OER):

1. <https://beginnersbook.com/2017/08/cpp-oops-concepts/>
2. https://www.tutorialspoint.com/cplusplus/cpp_object_oriented.htm
3. https://www.youtube.com/watch?v=h4kUiFOb_v0
4. <http://www.ddegjust.ac.in/studymaterial/mca-3/ms-17.pdf>

Department of Computer Application

Value-Added Course

VACCASD22 – SOFTWARE DEVELOPMENT FRAMEWORK USING CORE MVC

Code	Title of The Paper	Hours
VACCASD22	Software Development Framework Using Core MVC	30

Course Learning Outcomes:

- To gain knowledge about the methodologies to develop .Net based application.
- Understand the benefits of MVC design over traditional ASP.NET Web Forms.
- To learn about Windows, Forms and Role-Based Authentication.
- To learn about the Razor Syntax Fundamentals, Layout View, Sections and Partial Views.
- To build and deploy ASP.NET MVC application to the server.

Unit I

Introduction : ASP.NET MVC-Introduction- First MVC Application- Exploring Controllers - Controller Viewdata & TempData - Controller Action Methods - Controller Action Method Parameter - Controller Action Filters - Controller Action Custom Filters.

Unit II

Exploring Razor Views: View Razor Syntax - View Layouts - View Partialviews - View Tightly Coupled Model. Digging into HTMLHelper Methods: Html Helpers Part-I - Html Helpers Part-II - Html Helper Model Binding - Html Helper Display and Editors Methods - Html Helper Viewdata Binding - Html Helper Custom Templates - Html Helper Reusing Helpers.

Unit III

Understanding Model Binders: Default Model Binder - Custom Model Binder. Validation and Annotations: Model Validation - Unobtrusive Client Validations - Metadata Validation. Using Entity Framework: MVC and EF Crud Operations - MVC and EF Crud Operation Using BO Class - MVC and EF Crud Operations Using Generic BO Class.

Unit IV

Authentication and Authorization: Windows Authentication - Forms Authentication - Role Based Authentication - Anti Forgery Token - URL Routing - Working with Areas. JQuery and Ajax: Ajax Helper Methods Controller - JQuery UI - JQuery Template.

Unit V

Bundling and Minification - Mobile Compatibility - Web API: Web API First Example - Performing Crud Using Web API.

Books for Study:

1. Nimit Joshi , “Programming ASP.NET MVC 5 A Problem Solution Approach “, 2013.
2. Matthew MacDonald TMH, “The Complete Reference ASP.NET”, First Edition, Mcgraw Hill, 2002.

Books for Reference:

1. Kogent Learning Solutions Inc, “ASP.NET 2.0 Black Book”, Platinum Edition, DreamTech Press, 2006.
2. Dino Esposito “Introducing Microsoft ASP .NET 2.0”, First Edition, PHI Publisher.
3. Matthew MacDonald, “Pro ASP.NET 4 in C#”, 4th Edition, 2010.

Open Educational Resources (OER):

1. <https://docs.microsoft.com/en-us/aspnet/mvc/overview/older-versions-1/controllers-and-routing/aspnet-mvc-controllers-overview-cs>
 2. https://www.c-sharpcorner.com/UploadFile/g_arora/Asp-Net-mvc-series-for-beginners-part-1/
 3. <https://www.codeproject.com/Articles/207797/Learn-MVC-Model-View-Controller-step-by-step-in>
 4. https://en.wikipedia.org/wiki/ASP.NET_MVC
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Department of Computer Application

Value-Added Course

VACCASD22 – SOFTWARE DEVELOPMENT FRAMEWORK USING CORE MVC

Code	Title of The Paper	Hours
VACCASD22	Software Development Framework Using Core MVC	30

Course Learning Outcomes:

- To gain knowledge about the methodologies to develop .Net based application.
- Understand the benefits of MVC design over traditional ASP.NET Web Forms.
- To learn about Windows, Forms and Role-Based Authentication.
- To learn about the Razor Syntax Fundamentals, Layout View, Sections and Partial Views.
- To build and deploy ASP.NET MVC application to the server.

Unit I

Introduction : ASP.NET MVC-Introduction- First MVC Application- Exploring Controllers - Controller Viewdata & TempData - Controller Action Methods - Controller Action Method Parameter - Controller Action Filters - Controller Action Custom Filters.

Unit II

Exploring Razor Views: View Razor Syntax - View Layouts - View Partialviews - View Tightly Coupled Model. Digging into HTMLHelper Methods: Html Helpers Part-I - Html Helpers Part-II - Html Helper Model Binding - Html Helper Display and Editors Methods - Html Helper Viewdata Binding - Html Helper Custom Templates - Html Helper Reusing Helpers.

Unit III

Understanding Model Binders: Default Model Binder - Custom Model Binder. Validation and Annotations: Model Validation - Unobtrusive Client Validations - Metadata Validation. Using Entity Framework: MVC and EF Crud Operations - MVC and EF Crud Operation Using BO Class - MVC and EF Crud Operations Using Generic BO Class.

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Unit V

Bundling and Minification - Mobile Compatibility - Web API: Web API First Example - Performing Crud Using Web API.

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1. Nimit Joshi , “Programming ASP.NET MVC 5 A Problem Solution Approach “, 2013.
2. Matthew MacDonald TMH, “The Complete Reference ASP.NET”, First Edition, Mcgraw Hill, 2002.

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1. Kogent Learning Solutions Inc, “ASP.NET 2.0 Black Book”, Platinum Edition, DreamTech Press, 2006.
2. Dino Esposito “Introducing Microsoft ASP .NET 2.0”, First Edition, PHI Publisher.
3. Matthew MacDonald, “Pro ASP.NET 4 in C#”, 4th Edition, 2010.

Open Educational Resources (OER):

1. <https://docs.microsoft.com/en-us/aspnet/mvc/overview/older-versions-1/controllers-and-routing/aspnet-mvc-controllers-overview-cs>
 2. https://www.c-sharpcorner.com/UploadFile/g_arora/Asp-Net-mvc-series-for-beginners-part-1/
 3. <https://www.codeproject.com/Articles/207797/Learn-MVC-Model-View-Controller-step-by-step-in>
 4. https://en.wikipedia.org/wiki/ASP.NET_MVC
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Department of Computer Science
Value-Added Course
VACCSAD22 – ANDROID DEVELOPMENT

Code	Title of The Paper	Hours
VACCSAD22	Android Development	30

Course Learning Outcomes:

- To study the basic concept of android development tools and frameworks.
- To understand the concepts of Intents and Services.
- To learn about Networking and Mobile Apps.
- To provide Graphics Design, Packages and deployment of Android application tools.
- To study about Security, Hacking and development process of Mobile App.

Unit I:

Introduction: Introduction to Mobile Computing – Introduction to Android Development Environment - Factors in Developing Mobile Applications: Mobile Software Engineering - Frameworks and Tools - Generic UI Development - Android User - More on UIs: VUIs and Mobile Apps - Text-to-Speech Techniques - Designing the Right UI - Multichannel and Multimodal UIs.

Unit II:

Intents and Services: Android Intents and Services - Characteristics of Mobile Applications - Successful Mobile Development - Storing and Retrieving Data: Synchronization and Replication of Mobile Data - Getting the Model Right - Android Storing and Retrieving Data - Working with a Content Provider.

Unit III:

Communications Via Network and the Web: State Machine - Correct Communications Model - Android Networking and Web - Telephony: Deciding Scope of an App - Wireless Connectivity and Mobile Apps - Android Telephony - Notifications and Alarms: Performance - Performance and Memory Management - Android Notifications and Alarms.

Unit IV:

Graphics: Performance and Multithreading - Graphics and UI Performance - Android Graphics - Multimedia: Mobile Agents and Peer-to-Peer Architecture - Android Multimedia. Location: Mobility and Location Based Services – Android - Packaging and Deploying - Performance Best Practices - Android Field Service App.

Unit V:

Security and Hacking: Active Transactions - More on Security - Hacking Android - Platforms and Additional Issues: Development Process - Architecture, Design, Technology Selection - Mobile App Development Hurdles – Testing.

Books for Study:

1. Wei Meng Lee, “Beginning Android 4 Application Development”, John Wiley & Sons Inc, 1st Edition Inc, 2012.
2. Reto Meier, “Professional Android 4 Application Development”, John Wiley & Sons Inc, 1st Edition, 2012.

Books for Reference:

1. ZigurdMednieks, Laird Dornin, Blake Meike G, and Masumi Nakamura, “Programming Android”, O’Reilly Inc, 2nd Edition, 2012.
2. OnurCinar, “Android Apps with Eclipse”, Apress, Springer (India) Private Limited, 2nd Edition, 2012.

Open Educational Resources (OER):

1. <http://developer.android.com/training/basics/firstapp/index.html>
 2. www.vogella.com/articles/Android/article.html
 3. <https://hackernoon.com/applicationlifecycleinios12b6ba6af78b>
 4. <https://www.tutlane.com/tutorial/ios/ioslifecyclearchitecture>
 5. <https://developer.android.com/guide/components/activities/activitylifecycle>
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VALUE-ADDED COURSE
DEPARTMENT OF COMMUNICATION
MEDIA IN COLLABRATION WITH DOT IMAGINE INSTITUTE
VACVCPA22 - PORTRAYAL OF ART

Course Code	Title of The Course	Hours
VACVCBD22	Portrayal of Art	30

Course Learning Outcomes:

- To develop the basic skills in Art through Drawing and modeling in the students and to enable them to expand their visual expression through portraying of skills.

Course Syllabus:

Unit I: Basic Drawing (6 hours)

Basic structure of objects, drawing straight lines, the foundation of perspective, angels of lights and eye view. Elements of Drawing, Perspective Drawing, Level /Distance/ Direction & Angeles, Types of color, color mixing, water color, poster color (K1, K2, K3)

Unit II: Light and Shades (6 hours)

Pencil drawing and shading, Pen drawing, Composition Drawing, Material Maintenance, Lights and dimension – lines and curves of different thickness-creative patterns – effects of lights –and differences-landscape. (K1, K2, K3, K4)

Unit III: Perspective (6 hours)

Principles of Design-Balance-Emphasis, Proportion, Variety and Unity, Tree, Birds, Flowers, Animals, Human figure, (K1, K2, K3, K4)

Unit IV: Still Life Techniques (6 Hours)

Caricature drawing, Portrait drawing, live portrait, Oil pastel techniques, color filling techniques, still life drawing, Object drawing, Design, Outdoor Drawing, Clay modeling, Memory Drawing, Enlarge and Reduce drawing. (K1, K2, K3, K4)

Unit V: Practical Exercises (6 hours)

- Alphabets and numbers
 - Overlaying (Geometrical Shapes, Irregular shapes)
 - Patterns and structure in day-to-day life
 - Perspectives
- Cognitive level: K1, K2, K3, K4, K5

The drawing record should contain exercise completed by each student on every practical class. All exercises must be in pencil and different medium – water color, poster color