## Guidelines for the 4-Year UG Honours Program with Single Major and one Minor (w.e.f. A.Y. 2023-2024)



ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

## Guidelines for the 4-Year UG Honours Program with Single Major and one Minor (w.e.f. A.Y. 2023-2024)

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### 1. Background and Context

National Education Policy (NEP) 2020 recognizes that higher education plays an extremely important role in promoting human as well as societal well-being and in developing India as envisioned in its Constitution - a democratic, just, socially conscious, cultured, and humane nation upholding liberty, equality, fraternity, and justice for all. It notes that "given the 21st -century requirements, quality higher education must aim to develop good, thoughtful, well-rounded, and creative individuals".

In accordance with the NEP 2020, the UGC has formulated a new student-centric "Curriculum and Credit Framework for Undergraduate Programmes (CCFUP)" incorporating a flexible choice-based credit system, multidisciplinary approach, and multiple entry and exit options. This will facilitate students to pursue their career path by choosing the subject/field of their interest.

In consonance with NEP 2020 the Government of Andhra Pradesh rolled out a redesigned CBCS curriculum for 4-year UG Honours Programmes from the year 2020-21. With the CCFUP guidelines released in December 2022, the AP State Council of Higher Education has taken up the task of redesigning the curricular framework for the UG Degree Programmes.

The AP State Council of Higher Education (APSCHE) has constituted an Expert Committee vide Procgs. No. APSCHE/AC-I/CBCS-2023-24/Review Dt. 13.03.2023 under the Chairmanship of Prof. K. Rama Mohana Rao, Vice-Chairman AP State Council of Higher Education. On the recommendations of the Committee, 4-year UG Honours Program with a single Major and one minor is introduced from the A.Y.2023-2024.

### The context for the introduction of new curriculum and credit framework

1. Changing Educational Landscape: The higher education landscape is constantly evolving, influenced by emerging technologies, globalization, industry requirements, and societal changes. To ensure that undergraduate programs remain relevant and aligned with the needs of students and the job market, it is essential for regulatory bodies to periodically review and update the curriculum and credit framework.

- 2. Quality Enhancement: The APSCHE has introduced the new curriculum and credit framework in 4-year UG Honours with Single Major and one minor as part of its efforts to enhance the quality of undergraduate education. By setting updated guidelines and standards, the state can promote consistency, rigor, and alignment with global educational practices.
- 3. Employability and Skill Development: The APSCHE recognizes the need to align undergraduate programs with the demands of the job market and the evolving needs of the industry. This new curriculum and credit framework will emphasize the development of employability skills, multidisciplinary knowledge, and practical experiences through internships and/or industry collaborations.
- 4. Flexibility and Choice: Students today seek greater flexibility and choice in their educational journey. The new curriculum and credit framework aims to provide students with more options to tailor their course of study, select electives, or explore interdisciplinary subjects. This can help foster holistic development and cater to diverse student interests and aspirations.
- 5. Alignment with Global Standards: The APSCHE considers aligning undergraduate programs with international standards and best practices. This could involve incorporating elements such as outcome-based education, credit transferability, and flexible learning pathways to ensure compatibility and recognition of Indian degrees in the global academic arena.
- 6. Technology Integration: Considering the technological innovations and interventions in higher education, the new curriculum provides high flexibility to apply technology in the teaching and learning process. The students can opt for online minor courses, skill courses, multi-discipline courses, and some of the core courses also. The use of AR, and VR is encouraged to facilitate the HEIs to offer a number of majors and minors.

### 2. Program Overview

#### A. Program Name and Duration

-Year UG Honours with Single Major.

The duration of the Program is 4 years, with multiple entry and exit options after 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> years of study with a certificate, diploma and degree after the respective years of study. Honours Degree is awarded at the end of 4-years of study.

• 4 – Year UG Honours with Research with multiple entry and exit options after 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> years of study with a certificate, diploma and degree after the respective years of study. Honours with Research Degree is awarded at the end of 4-years of study.

## B. Program Objectives and Goals of UG Honours in Single Major

- Depth of Knowledge: Single major programs allow students to focus on a specific discipline, enabling them to develop in-depth knowledge and expertise in their chosen field.
- By concentrating their studies on a single major, students have the opportunity to delve deeply into the subject matter, engage in advanced coursework, and pursue specialized research or projects.
- Clarity and Specialization: Single major programs provide students with a clear academic pathway and a focused direction for their studies. They can pursue their passion and interests in a specific discipline without the need to divide their time and attention across multiple majors. This clarity of focus allows students to specialize in their chosen field, potentially enhancing their future career prospects.
- Efficient Use of Resources: Single major programs can be more efficient in terms of resource utilization for both students and institutions. Students can allocate their time, energy, and resources towards mastering a single subject area, maximizing their learning experience. Institutions can streamline their course offerings, faculty resources, and infrastructure to support single-major programs more effectively.

- Time Management and Graduation Timelines: Pursuing a single major program can offer advantages in terms of time management and graduation timelines. With a focused academic plan, students may have a clearer roadmap for completing their degree requirements within the expected timeframe. This can potentially minimize delays in graduation and facilitate a smoother academic journey.
- Flexibility and Elective Choices: Single-major programs often provide students with flexibility in choosing elective courses and exploring interdisciplinary studies. By focusing on a single major, students may have more room in their curriculum to pursue elective courses that complement their primary area of study or explore related disciplines that align with their interests.
- Research and Career Alignment: Single major programs can better align with students' research interests and career goals. By immersing themselves in a specific field, students have more opportunities to engage in research projects, internships, and practical experiences directly related to their major. This specialization can enhance their expertise and make them more competitive in their chosen career path.
- Reduced Course Load and Stress: Pursuing a single major program typically involves a lower course load compared to three major programs. This can help reduce the stress and academic burden on students, allowing them to focus more deeply on their coursework, engage in extracurricular activities, and maintain a better work-life balance.
- Ensuring Multidisciplinary and Interdisciplinary learning.
- Opportunity for learners to choose the courses of their interest in all disciplines;
- Facilitating multiple entry and exit options with UG certificate/ UG diploma/ or degree depending upon the number of credits secured and period of study;
- Online learning, and hybrid modes of blended learning ensured.
- Integrated Community Service Project into the curriculum.

- Internship/On the Job Training (both in physical or virtual mode) incorporated in two stages, one, a short-term internship during the summer vacation between 2<sup>nd</sup> and 3<sup>rd</sup> years of study and the other a full-semester internship, either in the V or VI semester.
- Multidisciplinary courses are made mandatory.
- Skill Enhancement courses are introduced.
- Mandatory Open Online Transdisciplinary courses are introduced.
- Courses on Indian Knowledge Systems introduced.
- Multiple entry and exit options are provided.
- One Minor with 6 courses and 24 credits is compulsory.

### 3. Program Structure and Curriculum

#### A. Credit Requirements

- For UG Honours Degree the number of credits required is 160 along with 20 additional credits assigned for Community Service Project (4 credits), Short Term Internship (4 credits) and Semester Internship (12 credits).
- These 160 credits are apportioned as, 84 for Major Courses, 24 for Minor Courses, 12 for Languages, 6 for Multidisciplinary Courses, 28 for Skill Courses, 4 for Open Online Transdisciplinary Courses and 2 for Common Value-Added Courses.
- The thumb rule for assigning credits is 1 hour of theory per week is equivalent to 1 credit. Similarly, 2 hours of practical per week is equivalent to 1 credit. The credits assigned for Internship/Apprenticeship/OJT are not to be equalized with the hours of work done.
- A student can acquire a maximum of 40% of credits online.

#### **B. Major Courses**

- Major discipline is the discipline or subject of main focus and the degree will be awarded in that discipline. Students should secure the minimum prescribed number of credits, i.e., 84 (about 50% of total credits) through core courses in the major discipline.
- A student of UG Honours Degree has to study 21 course papers with 84 credits in the chosen major. The eligibility for admission into a Major will be similar to the existing eligibility for a program.
   Eligibility: APSCHE will publish the eligibility criteria in consultation with universities for all the UG programmes.
- Universities can offer new Majors in addition to those identified for the A.Y. 2023-24 with prior permission of APSCHE.
- A student has to choose one Major for gaining in-depth knowledge in that subject discipline.

- All discipline-specific major courses carry a weightage of 4 credits, irrespective of the discipline of study, viz., arts, commerce, science, etc. Wherever practicals are involved, 3 credits are assigned for 3 hours of theory and 1 credit is assigned for 2 hours of practical. For all courses without practicals, 4 credits are assigned for 4 hours of theory.
- The first two courses in the Major shall be the foundation courses for that Major and shall be pathway courses to choose their Minor in the second semester.
- In the case of Mathematics there will be 5 hours of workload per week which includes practice sessions (NOT PRACTICALS) and the number of credits assigned is 4.
- In the case of B.Com., Computer Applications or for BCA or wherever Computer Science/Applications involved subjects or courses are offered, the courses (papers) shall have 3 hours of theory and 2 hours of practical.

#### C. Minor Courses

- Students have to choose a Minor in the second semester. The student can choose a minor cutting across the disciplines or from the allied disciplines.
- A student has to study 6 courses in the chosen minor with 24 credits. The minor courses start from the second semester onwards.
- Some minors may require eligibility to study a particular course at the intermediate level. Such conditions, if any, will be notified against the minor.
- A student can complete a second minor online from approved sources during the period of study and submit the credits to the university for inclusion in the Degree certificate.
- Minor courses can be studied offline or online or in blended mode.
- Universities can add new minors with an intimation to APSCHE.

#### D. Languages

- Two courses in English Language and two courses in Modern Indian Language are to be completed in the first two semesters.
- Each language course is taught for 4 hours with 3 credits.
- A student can opt for doing the English Language Courses online which are equivalent to IELTS/TOEFL/OET, etc. Or the minimum required scores for qualifying in IELTS/TOEFL/OET can be reckoned for the 6 credits assigned for English Language.

#### E. Skill Courses

- Enhancing student employability is the top priority for higher education. Employability is a measure of a student's ability to secure their first job and remain employed throughout their working lives.
- A pool of Skill Enhancement Courses is offered in Semesters I to IV. These Skill Enhancement Courses are contemporary in nature and not major-specific.
- A student has to complete 6 such courses (2 credits each) in Semesters I to IV assigned with 12 credits. Students are offered choices for selecting skill enhancement courses of their interest.
- Major subject-specific Skill Enhancement courses with choices are offered in Semester V/VI as two of the four major courses.
- And two Skill Enhancement courses each with choices are offered in Semesters VII and VIII in the concerned major.
- Universities can add new Skill enhancement courses with an intimation to APSCHE.

#### F. Multidisciplinary Courses

- In consonance with NEP 2020 all UG students are required to undergo multidisciplinary courses. These courses are intended to broaden the intellectual experience.
- Students are not allowed to choose the courses in a major discipline

or repeat courses already undergone at the higher secondary level or Intermediate level or 12<sup>th</sup> class as the multidisciplinary course.

- A student has to complete 3 multidisciplinary courses each carrying 2 credits.
- Students are offered choices for selecting multidisciplinary courses of their interest.
- Universities can add new multidisciplinary courses with an intimation to APSCHE.

#### G. Common Value-Added Courses

• Common Valued Added Course includes Environmental science/education, and shall carry 2 credits.

#### H. Courses on Indian Knowledge Systems

- Courses on IKS are integrated into the curricular framework. The IKS course shall be an Audit Course which is a mandatory course with only a Pass or Fail.
- A student has to complete 2 courses on IKS one in the VII semester and one in the VIII semester.
- Students are offered choices for selecting IKS courses of their interest.
- Universities can add new IKS courses with an intimation to APSCHE.

#### I. Open Online Transdisciplinary Courses

- Two mandatory Open Online Transdisciplinary Courses, with 2 credits per course, are to be done by the students, one in each of Semesters VII and VIII.
- Students are free to select courses of their interest from any discipline.

#### J. 10-month mandatory Internship

Three internships are mandatory for all students irrespective of the of the Program of study.

## First internship (April-May after 1st year examinations): Community Service Project

- To inculcate social responsibility and compassionate commitment among the students, the summer vacation in the intervening 1st and 2nd years of study shall be for Community Service Project.
- Learning outcomes:
  - To facilitate an understanding of the issues that confronts the vulnerable/marginalized sections of the society.
  - To initiate team processes with the student groups for societal change.
  - To provide students an opportunity to familiarize themselves with urban/rural community they live in.
  - To enable students to engage in the development of the community.
  - To plan activities based on the focused groups.\
  - To know the ways of transforming society through systematic programme implementation.

Universities and colleges should follow the APSCHE guidelines for the community service project and the program book designed for the purpose.

**Second Internship** (April-May after 2<sup>nd</sup> year examinations): Apprenticeship / Internship / On-the-job training / In-house Project / Off-site Project

- To make the students employable, an Apprenticeship / Internship / On the job training / In-house Project / Off-site Project shall be undertaken by the students in the intervening summer vacation between the 2nd and 3rd years.
- Learning outcomes
  - Explore career alternatives prior to graduation.
  - Integrate theory and practice.
  - Assess interests and abilities in their field of study.
  - Learn to appreciate work and its function towards future.
  - Develop work habits and attitudes necessary for job success.
  - Develop communication, interpersonal and other critical skills in the future job.
  - Build a record of work experience.

• Acquire employment contacts leading directly to a full-time job following graduation from college.

Universities and colleges should follow the APSCHE guidelines for the short-term project and the program book designed for the purpose.

#### Third internship (5th/6thSemester period):

During the entire 5th /6th Semester, the student shall undergo Apprenticeship / Internship / On the Job Training. This is to ensure that the students develop hands on technical skills which will be of great help in facing the world of work.

- Learning outcomes
  - Explore career alternatives prior to graduation.
  - Integrate theory and practice.
  - Assess interests and abilities in their field of study.
  - Learn to appreciate work and its function towards future .
  - Develop work habits and attitudes necessary for job success.
  - Develop communication, interpersonal and other critical skills in the future job.
  - Build a record of work experience.
  - Acquire employment contacts leading directly to a full-time job following graduation from college.
  - Acquire additional skills required for the world of work.

Universities and colleges should follow the APSCHE guidelines for the semester term project and the program book designed for the purpose.

For complete details visit www.apsche.gov.in

### 4. Multiple Entry and Exit Options

#### • Purpose:

Flexibility is important to choose one's academic pathway to the award of certificate, diploma, and degree. There are occasions when learners have to give up their education mid-way for various reasons. The academic records/marks/credits for such incomplete academic programmes remain unaccounted. In order to address such issue, the curriculum framework paves way for multiple entry and exit in to the degree programme.

- The purpose of Multiple Entry and Exit Options shall meet the following objectives
  - o An initiative to curtail the dropout rate and improve GER.
  - o Offers flexibility in making choice between continuing of education at a stretch for 4 years and exiting and taking up job and returning back to the learning system.
  - o Offers different designs of programmes of study, viz., certificate, diploma, degree and degree with honours.
  - o Ensures scaling up from certificate level to degree with honours level.
  - o Enables credit accumulation and transfer of credits.
  - o Ensures zero-year-loss to students in the event of exiting in between the 4-year programme of study.
- Operative Details of ME-ME

#### • 1st year

- Entry 1: The entry requirement for the 1st year of 4-year Degree (Level - 4.5 of National Credit Framework (NCrF) of UGC) is Intermediate/12th class of CBSE/ or any other equivalent certificate approved by the Board of Intermediate Education.
- o Exit 1: A Certificate will be awarded when a student exits at the end of the year 1 (Level 4.5).
- Certificate in Sciences/Arts & Humanities/Commerce/Business
  Management/Business Administration / Computer Applications
  / Hotel Management is to be awarded if students exit after
  successful completion of 1 year of study in B.Sc / B.A / B.Com /
  BBA / BBM / BCA / BHM respectively. However, the students
  are required to pass all courses, Languages, Multidisciplinary,
  Skill Enhancement and Core Courses in Major and Minor along

with completion of Community Service Project in the summer term.

#### • 2nd year:

- o Entry 2: The entry requirement for 2nd year of 4-year Degree (Level − 5 of NCrF of UGC) is a Certificate obtained after completing the first two semesters of the undergraduate programme. A student can seek entry into the 2nd year of study in a college, provided there are vacancies in that particular programme in that college. The transfer admission shall be within the intake permitted to the college.
- o Exit 2: A Diploma will be awarded when a student exits at the end of the 2nd year (Level 5 of NCrF).
- Diploma in Sciences / Arts & Humanities / Commerce / Business Management / Business Administration / Computer Applications / Hotel Management is to be awarded if students exit after successful completion of 2nd year of study in B.Sc / B.A / B.Com / BBA / BBM / BCA / BHM respectively. However, the students are required to pass all courses, Languages, Multidisciplinary, Skill Enhancement and Core Courses in Major and Minor along with completion of Community Service Project in the summer term between 1st and 2nd year and short-term internship in the summer term between 2nd and 3rd year.

#### • 3rd year:

- Entry 3: The entry requirement for 3rd year of 4-year Degree (Level - 5.5 of NCrF of UGC) is a Diploma obtained after completing two years (4 semesters) of the undergraduate programme. A student can seek entry into the 3rd year of study in a college, provided there are vacancies in that particular programme in that college. The transfer admission shall be within the intake permitted to the college.
- Exit 3: A Degree will be awarded when a student exits at the end of the 3rd year (Level 5.5 of NCrF). Bachelor's Degree in Sciences / Arts & Humanities / Commerce / Business Management / Business Administration / Computer Applications / Hotel Management is to be awarded if students exit after successful completion of 3rd year of study. However, the students are required to pass all courses, Languages, Multidisciplinary, Skill Enhancement and Core Courses in Major and Minor along with completion of Community Service Project in the summer term between 1st and 2nd year and short-term

- internship in the summer term between 2nd and 3rd year and a full-semester internship.
- o The Degree awarded shall include the Major and Minor/s in parenthesis. For Ex., B.Sc (Zoology with Chemistry Minor)

#### • 4th year:

- Entry 4: The entry requirement for 4th year of 4-year Degree (Level – 6 of NCrF of UGC) is a degree obtained after completing three years (6 semesters) of the undergraduate programme. A student can seek entry into the 4th year of study in a college, provided there are vacancies in that particular programme in that college. The transfer admission shall be within the intake permitted to the college.
- Exit 4: A Degree with Honours will be awarded when a student exits at the end of the 3rd year (Level 6 of NCrF). Bachelor's Degree with Honours in Sciences/Arts & Humanities/Commerce/Business Management/Business Administration / Computer Applications /Hotel Management with Honours is to be awarded if students exit after successful completion of 4th year of study.
- o The name of the Major/s shall be indicated in parenthesis and the name of the Minor/s. For ex., B.Sc Honours (Zoology with Chemistry as Minor) or B.Sc Honours (History with Political Science as Minor) and so on.
- o If the student completes the 4th year with courses in research methodologies and a rigorous research project in one of the major of study, a Bachelor degree (Honours with research) is awarded.

### 5. Program Outcomes and Benefits

#### A. Knowledge and Skills Development

• Knowledge and skills development can be explained as a crucial program outcome and benefit of a 4-year Honours Degree Program. As students progress through the program, they acquire a wide range of subject-specific knowledge and general skills that prepare them for success in their chosen field and beyond.

#### • Subject-Specific Knowledge:

**In-Depth Understanding:** The 4-year Honours Degree Program provides students with an opportunity to develop a deep understanding of their chosen major. Through advanced coursework and specialized study, students gain expertise in their field of interest.

**Critical Analysis:** Students learn to critically analyze complex concepts and theories within their major. They acquire the ability to evaluate and apply knowledge to real-world scenarios, fostering problem-solving skills.

#### • Interdisciplinary/Multidisciplinary Knowledge:

Holistic Perspectives: Honours Degree Programs often encourage interdisciplinary learning, allowing students to explore connections between different fields of study. This broadens their perspectives and promotes a well-rounded education.

Integrative Learning: Students develop the ability to integrate knowledge from various disciplines, enabling them to address multifaceted challenges with a comprehensive approach.

#### • Communication Skills:

Written Communication: Students enhance their written communication skills by preparing reports, essays, and research papers. They learn to articulate complex ideas clearly and effectively. Oral Presentation: Through presentations and seminars, students develop strong oral communication skills, enabling them to present ideas confidently and persuasively.

#### • Research and Analytical Skills:

Research Experience: Honours Degree Program with Research typically include research components such as a capstone project or thesis. Students engage in research methodologies, data analysis, and independent inquiry, honing their research skills.

Critical Thinking: Through research and coursework, students cultivate critical thinking abilities, enabling them to analyze data, evaluate evidence, and form well-founded arguments.

#### B. Career Opportunities and Graduate Employability

- Career options and graduate employability are the significant program outcomes and benefits of the 4-year Honours Degree Program. The program equips students with the necessary knowledge, skills, and experiences to pursue diverse career paths and enhances their potential for successful employment after graduation.
- The 4-year Honours Degree Program provides students with specialized knowledge and expertise in their chosen field of study through advanced coursework and in-depth study.
- Graduates possess a deep understanding of their subject, making them more attractive to employers seeking candidates with specialized knowledge and skills.
- Throughout the program, students develop a range of industry-relevant skills such as critical thinking, problem-solving, data analysis, research, and communication skills.
- Graduates are well-prepared to meet the demands of the job market and can apply their skills effectively in professional settings.
- Honours Degree Program incorporate mandatory internships; hence graduates gain valuable practical experience during their studies, enhancing their employability by demonstrating hands-on skills and industry exposure.
- Honours Degree Program emphasizes critical thinking and adaptability, preparing students for the rapidly changing job market.
- Graduates are equipped to navigate and thrive in dynamic work environments, and they possess a strong foundation for continuous learning and skill development.
- As a result of the specialized knowledge, skills, and experiences gained, graduates are highly sought after by employers. And enjoy enhanced employability and marketability, increasing their chances of securing rewarding job opportunities and career advancement.

#### C. Further Education and Postgraduate Studies

- After completion of the first 3 years of study in the Honours Degree Program, if a student exits, he/she is awarded a Degree and is eligible to pursue a 2-year Postgraduate Program.
- A student getting a UG Honours Degree can do 1-year Postgraduate Program.
- A student awarded with UG Honours Degree with Research is eligible to get direct admission into Ph.D. program provided the student secures 75% and above marks.

### 6. Appendices

### A. Curriculum framework

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#### B. Guidelines for UG Honours with research

#### **UG Honours with Research**

- 1. Students have to choose after the completion of the third year of study, the Honours program for the fourth year of study.
- 2. They can pursue Honours program in the major/minor domain of joining in Honours with the research programme.
- 3. If the student wants to join in Honours with research, he/she should pass all the courses in the first three years of the UG program and secure 75% or more marks.
- 4. For Semester 7, the curricular structure includes 3 common courses on Research Methodologies and 2 discipline-specific courses in the 7th semester.
- 5. In the 8<sup>th</sup> Semester, the student has to complete an individual research project in one of the three subjects of his/her study in the first three years.

#### 6. Courses on Research Methodology (7th Semester):

The course structure for the 7th Semester shall be as follows:

#### B.A./B.Com./BBA/BCA,etc:

1. Course 7.1 (7th Semester Course 1)

Research Methodology: Conceptual and Theoretical Perspectives

2. Course 7.2

Research Methodology: Observational and Empirical Perspectives

3. Course 7.3

Statistical Analysis using Computer Packages for Research Methodology

4. Course 7.4

Introduction to Social Science Research

5. Course 7.5

Quantitative Approach to Social Science Research

#### B.Sc (Statistics/Mathematics/Computer Science)

1. Course 7.1

Research Methodology: Conceptual and Theoretical Perspectives

2. Course 7.2

Research Methodology: Observational and Empirical Perspectives

3. Course 7.3

Statistical Analysis using Computer Packages for Research Methodology

4. Course 7.4

Advanced Statistical Methods for Data Analysis (For Statistics students)

5. Course 7.4

Advanced Areas of Computer Science (For Computer Science students)

6. Course 7.4

Advanced Mathematics for Research (For Mathematics students)

NOTE: For Statistics students, apart from Courses 7.1, 7.2 and 7.3 being mandatory courses, sl no.4 is compulsory and they can opt for sl no.5 or 6 as their 5th Course.

For Computer Science students, apart from Courses 7.1, 7.2 and 7.3 being mandatory courses, sl no.5 is compulsory and they can choose between sl. nos. 4 and 6 as their 5th Course.

In case of Mathematics students, apart from Courses 7.1, 7.2 and 7.3 being mandatory courses, sl no.6 is compulsory and there will be a choice between sl nos. 4 and 5 as their 5th Course.

#### **B.Sc** (Physical Sciences/Chemical Sciences)

1. Course 7.1

Research Methodology: Conceptual and Theoretical Perspectives

2. Course 7.2

Research Methodology: Observational and Empirical Perspectives

3. Course 7.3

Statistical Analysis using Computer Packages for Research Methodology

4. Course 7.4

Advanced Analytical Techniques for Science Research

5. Course 7.5

Materials Science

#### **B.Sc** (Biological Sciences)

1. Course 7.1

Research Methodology: Conceptual and Theoretical Perspectives

2. Course 7.2

Research Methodology: Observational and Empirical Perspectives

3. Course 7.3

Statistical Analysis using Computer Packages for Research Methodology

4. Course 7.4

Advanced Analytical Techniques for Science Research

5. Course 7.5

Advanced Techniques in Biological Sciences

#### 7. Open Online Courses

A Student shall do TWO Open Online Transdisciplinary Courses, in Semesters 7 & 8. The Online Courses can be of students' choice, either in the same domain/related domain or multidisciplinary in nature. The

Online Courses can also be done either in SWAYAM or NPTEL or COURSEERA or from any other resources recognized by the APSCHE and the competent authority of the respective Universities. The Open Online Courses shall carry 4 Credits each. Students shall have a choice of choosing either two online courses of 2 credits each or one course of 4 credits or can acquire a greater number of credits. If a student is desirous of choosing Open Online Courses offered by industry or a recognized online course provider, the duration shall be not less than 60 hours for a 4-credit course.

#### **Assessment for Online Courses:**

If the Online Course is done from among the Online courses offered in SWAYAM or UGC MOOCs or NPTEL, the credits and marks awarded shall be recognised and calculated for the SGPA and CGPA. The same shall be the case if any service provider conducts an online examination (proctored). If no online examination is conducted either on SWAYAM or UGC MOOCs or NPTEL or proctored examination by the service provider, a pen and paper examination be conducted by the university.

Year	Semester	Course Code	Type of Course	Hrs/Week	Credits
4	VII	VII.1.8	Common Course	5	5
4	VII	VII.2.9	Common Course	5	5
4	VII	VII.3.10	Common Course	5	5
4	VII	VII.4.11	Discipline Specific Course	5	5
4	VII	VII.5.12	Discipline Specific Course	5	5
4	VII	VII.6.13	Transdisciplinary Online Course	15 Weeks	2
4	VII	VII. 7.14	IKS	15 Weeks	0
4	VIII				
4	VIII				
4	VIII	VIII.1.14	Research Project in	15 Weeks	25
4	VIII		major/minor		
4	VIII				
4	VIII	VIII.2.15	Transdisciplinary Online Course	15 Weeks	2
4	VIII	VIII.3. 16	IKS	15 Weeks	0

8. Individual Research Project in Semester 8 for students of Commerce, Arts, Management, Languages, etc:

#### Guidelines for the Research Project to be done during VIII Semester

#### **Objectives:**

The purpose of this course is to introduce students to the process of conducting social science research projects. The students will be helped to conceptualise, design and execute a research project by a teacher guide.

#### Structure:

Most of the sessions in this semester will be designed in a seminar format. This will be supplemented by individual / group conference/supervision. The focus will be on discussions and analysis of assignments.

Learners will be encouraged to read books and research journals related to his/her research topic and share them in the seminars.

Learners will be initiated to think about research issues throughout the semester, debate these issues with teachers and classmates and synthesize these issues mentally to develop as a researcher.

Being a research degree, this course will entail (1) a much higher workload than any bachelor's degree course studied so far (2) a heavy dose of readings, and (3) a substantial amount of critical thinking.

#### **Duration of the Project: 15 Weeks**

#### **Method of Assessment:**

Continuous Internal Evaluation 100 marks (spread across the semester) Semester End External Evaluation shall be conducted at the end of the Semester.

Dissertation 200 marks Seminar 100 marks Viva voce 100 marks

There shall be a panel of three Examiners for the Semester End External Evaluation, comprising of Faculty Supervisor, one faculty member-internal examiner and one external examiner.

#### Research Project Work Schedule:

A. Individual Research Project in Semester VIII for students of BA, B.Com, BBA, BCA, etc:

#### Week 1: Research Seminar

Learners will be helped to select a topic of his/her choice and prepare a paper (3-4 pages) and present it in a seminar organised by the department in the end of the week.

Method of Internal Assessment: Two faculty members (Faculty supervisor and the faculty member who is teaching research methodology papers)

#### Week 2: Research Proposal

In this week using the learning of the previous semester about the research process learners would prepare a research proposal.

Learners will select a research problem of his/her choice for this proposal and submit it at the end of the week. This proposal will be 5 to 6 pages. It would include (1) research problem and significance, (2) literature review, (3) theory and hypotheses, (4) research design (5) Sampling (6) tool of data collection (7) data processing and analysis and (8) plan of research report. The learner will be required to present his/her research proposal at the end of the week in 15-20 minutes in the classroom.

Method of Internal Assessment: Two faculty members (the Faculty supervisor and the faculty member who is teaching research methodology courses) will assess the proposal.

#### Week 3: Data Collection

In order to collect the requisite data for research study, learners are required to and use the tools of data collection devised/selected during the last semester. Learners are advised to go for pre-testing of tool of data collection selecting 5 to 10 respondents and revise or modify their tool.

#### Week 4: Data Collection

In this week the learners will go to the field and collect data from the respondents selected for the study in the previous semester.

Method of Internal Assessment: The faculty supervisor will assess the method and procedures used by the learner in data collection.

#### Week 5: Data Processing using SPSS

Once the data are collected, the learners will be helped to process it. They will be required to prepare a Code Book and a Master Chart. This is essential to process the data using SPSS. Learners will be helped to define data, enter data in Data Editor of SPSS.

Method of Internal Assessment: Faculty supervisor will assess the method and procedures used by learner in data collection.

#### Week 6: Data Analysis using SPSS

In this week the learners will be helped to prepare a plan of tabulation and execute it. The tabulation plan may include a list of independent and dependent variables, univariate tables, bivariate tables, trivariate tables and

a list of statistical procedures to be applied. Accordingly, the learners will generate Tables and Statistical test results.

Method of Internal Assessment: The faculty supervisor will assess the method and procedures used by the learner in data collection.

#### Week 7 and Week 8: Writing of Chapter I: Introduction

The research report starts with the 'Introduction' of the research problem. It introduces the topic or research under investigation and its importance. The introductory chapter gives the background to the specific area of investigation. This is followed by a brief statement of the problem under study. It is also necessary to explain the significance of the present problem. Here researcher is expected to describe precisely and clearly the objective(s) of the research study. This is followed by the statement of the proposed hypotheses of the study that would be tested through statistical procedures.

Method of Internal Assessment: The faculty supervisor will assess the method and procedures used by the learner in data collection.

#### Week 9: Writing of Chapter II: Review of Literature

The next task of the researcher is to present a review of the relevant literature. This includes a critical analysis of earlier research studies. As such, while reviewing the literature, it should be kept in mind that literature has been critically examined in terms of agreements and disagreements among the researchers in order to justify the necessity for conducting the research study.

Method of Internal Assessment: The faculty supervisor will assess the method and procedures used by the learner in data collection.

#### Week 10 and Week 11: Writing of Chapter III: Research Methodology

This is followed by a description of the design of a study. This section provides a detailed overview of "how" the study was conducted. The various subsections include: i) description of the research design of the study, ii) variables: the independent, dependent and control variables with their operational definitions; iii)sampling procedures: defining the population, and drawing of sample for the present study; iv) listing and describing methods and tools of data collection used in the study, like questionnaires, attitude scales, etc., their reliability, validity and administration etc.; v) describing the statistical procedures used in the analysis of data including the rationale of the use and method of data analysis.

Method of Internal Assessment: Faculty supervisor will assess the method and procedures used by learner in data collection.

## Week 12 and Week 13: Writing of Chapter V: Data Analysis and Interpretation

The outcome of the research is presented in tabular form with the help of statistical procedures. The data are analysed and interpreted and presented in the form of a research report. If necessary, the findings are also presented graphically. The figures do not necessarily; repeat the tables, but present data visually for easy understanding and easy comparisons.

Method of Internal Assessment: The faculty supervisor will assess the quality of analysis and interpretation of data.

### Week 14 and Week 15: Writing of Chapter VI: Major Findings, Conclusions and Discussions

This is usually the fifth chapter of a research report. The major findings of the study analyzed and interpreted in the preceding chapter are precisely and objectively stated in this chapter. The fourth chapter contains such presentations as only a trained researcher can understand because of the complexities involved, but in the fifth chapter, the major findings are presented in a non-technical language so that even non-trained researchers such as a planner or an administrator in the field can make sense out of them.

The major findings are followed by a discussion of the findings. The major findings are compared with the findings of other related research studies which have already been reviewed in the second chapter of the report. Accordingly, the hypotheses formulated in the first chapter are either accepted or rejected. In case the null-hypotheses are rejected, alternative hypotheses are accepted. If the findings do have any discrepancy in comparison with those of other researches, or if the findings do not explain sufficiently the situation or problem under study, or if they are inadequate for generalizations, explanations with proper justification and explanation have to be provided.

**Method of Internal Assessment:** The faculty supervisor will assess the presentation of major findings, conclusions and discussions and will give a grade.

Though the Research Project is completed in the VIII Semester, the work could be initiated in the VII Semester itself.

B. Individual Research Project in Semester VIII for Students of Science:

#### Guidelines for the Research Project to be done during VIII Semester

#### Identification of Research Project:

The student has to select a topic which is interesting to him/her and related to subject which is relevant to society or industry. The title of the topic can be designed with the consultation of the research supervisor.

#### **Objectives:**

The purpose of this course is to introduce students to the process of conducting science research projects. The students will be helped to conceptualise, design and execute a research project by a teacher guide. The students have to identify the objectives related to the topic of the research project proposed.

#### Structure:

Most of the sessions in this semester will be designed in a seminar format. This will be supplemented by individual / group conference/supervision. The focus will be on discussions and analysis of assignments.

Learners will be encouraged to read books and research journals related to his/her research topic and share them in the seminars.

Learners will be initiated to think about research issues throughout the semester, debate these issues with teachers and classmates and synthesize these issues mentally to develop as a researcher.

Being a research degree, this course will entail (1) a much higher workload than any bachelor's degree course studied so far (2) a heavy dose of readings, and (3) a substantial amount of critical thinking.

#### **Duration of the Project: 15 Weeks**

#### **Method of Assessment:**

Continuous Internal Evaluation 100 marks (spread across the semester)

Semester-End External Evaluation

Dissertation 200 marks
Seminar 100 marks
Viva voce 100 marks

(shall be conducted at the end of the Semester)

There shall be a panel of three Examiners for the Semester End External Evaluation, comprising of Faculty Supervisor, one faculty member-internal examiner and one external examiner.

#### Research Project Work Schedule:

#### Week 1: Research Seminar

Learners will be helped to select a topic of his/her choice and prepare a paper (3-4 pages) and present it in a seminar organised by the department at the end of the week.

Method of Internal Assessment: Two faculty members (Faculty supervisor and the faculty member who is teaching research methodology papers)

#### Week 2: Research Proposal

In this week using the learning of the previous semester about the research process learners would prepare a research proposal. Learners will select a research problem of his/her choice for this proposal and submit it at the end of the week. This proposal will be 5 to 6 pages. It would include (1) an Introduction of the research problem, (2) Review of the literature related to the problem, aims and objectives of the proposed research problem (3) Materials and Methods related research problem (4) Results related to the methods by using with suitable statistical tools, (5) Discussion, Summary and Conclusion of the research findings on basis of the proposed problem, submit some of the significant references as a bibliography. Learners will be required to present his/her research proposal at the end of the week in 15-20 minutes in the classroom.

Method of Internal Assessment: Two faculty members (the Faculty supervisor and the faculty member who is teaching research methodology courses) will assess the proposal.

#### Week 3: Literature Collection

In order to collect the requisite literature for the research study, learners are required to and use various methods of information through review articles/ research journals/ various web links. Learners are advised to prepare a review of the literature related to the research proposal through the recent literature information. This will strengthen the design of the Aim and objectives of the research proposal.

#### Week 4: Designing of the Methodology

In this week the learners will collect the literature related to the methodology to be used in the present proposed research proposal by using different SOPs. The interpretation of the data obtained from the results also can be selected for the present study.

Method of Internal Assessment: Faculty supervisor will assess the method and procedures used by learner in data collection.

#### Week 5: Results Processing and analysis

Once the results are obtained, the learners will be used various methods in the representation of figures, tabular, and graphical methods to process it. The analysis of the results will be processed by using various data packages.

Method of Internal Assessment: The faculty supervisor will assess the method and procedures used by the learner in data collection.

### Week 6: Discussion on the interpretation of the results, summary and conclusion

In this week the learners will be helped to discuss the results obtained in the previous week and interpret the results by using the supporting literature published earlier. After thorough discussion, the summary can be obtained with the respective results obtained earlier. Finally, it will be concluded the findings of the present proposed research proposal. It will be followed by adding the references as a bibliography and also appended the preparation of solutions, buffers, media etc.,

Method of Internal Assessment: The faculty supervisor will assess the method and procedures used by the learner in data collection.

#### Week 7 and Week 8: Writing of Chapter I: Introduction

The research report starts with the 'Introduction' of the research problem. It introduces the topic or research under investigation and its importance. The introductory chapter gives the background to the specific area of investigation. This is followed by a brief statement of the problem under study. It is also necessary to explain the significance of the present problem.

Method of Internal Assessment: The faculty supervisor will assess the method and procedures used by the learner in data collection.

#### Week 9: Writing of Chapter II: Review of Literature

The next task of the researcher is to present a review of the relevant literature. This includes a critical analysis of earlier research studies. As such, while reviewing the literature, it should be kept in mind that literature has been critically examined in terms of agreements and disagreements among the researchers in order to justify the necessity for conducting the research study. Here researcher is expected to describe precisely and clearly the Aim(s) and objective(s) of the research study.

Method of Internal Assessment: Faculty supervisor will assess the method and procedures used by learner in data collection.

## Week 10 and Week 11: Writing of Chapter III: Materials and Methods related research problem

This is followed by a description of the design of a study. This section provides a detailed overview of "how" the study was conducted. The various subsections include: i) description of the research design of the study, ii) variables: the independent, dependent and control variables with their operational definitions; iii)sampling procedures: defining the population, and drawing of sample for the present study; iv) listing and describing methods and tools of data collection used in the study, like questionnaires, attitude scales, etc., their reliability, validity and administration etc.; v) describing the statistical procedures used in the analysis of data including the rationale of the use and method of data analysis.

Method of Internal Assessment: The faculty supervisor will assess the method and procedures used by the learner in data collection.

## Week 12 and Week 13: Writing of Chapter IV: Results processing and analysis related to the methods by using suitable statistical tools

The findings of the results will be presented in the form of figures/photos, tabular and graphically. The outcome of the research is presented in tabular form with the help of statistical procedures. The results are analysed and interpreted and presented in the form of a research report. The figures do not necessarily; repeat the tables, but present data visually for easy understanding and easy comparisons.

Method of Internal Assessment: The faculty supervisor will assess the quality of analysis and interpretation of data.

# Week 14 and Week 15: Writing of Chapter V: Discussion, Summary and Conclusion of the research findings on the basis of the proposed problem

The fifth chapter in the research report deals with the discussion based on results which are analysed with the interpretation of the literature. Depending on the interpretation of the discussion with the correlation of the results the summary of the research problem can be narrated in a chronological way. The Conclusion will be given depending on the research finding of the proposed problem. After conclusion, the references will be added as a bibliography and followed by the appendix as preparation of solutions, buffers and media or any other information related to the research proposal. If possible, the faculty supervisor may advise the student to submit the plagiarism certificate, which will be useful to the candidate to understand the writing skills of the research report.

Method of Internal Assessment: The faculty supervisor will assess the presentation of major findings depending on the methodology used, presentation of results, interpretation of the results with discussion, summary of the proposed research problem and conclusion.

Though the Research Project is to be completed in the VIII Semester, the work could be initiated in the VII Semester itself.

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**IKS**# Indian Knowledge Systems - Audit Course

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Sem 2	2	6+4	8	1	3+2	4	2	8	6				2	4	4							7	27	22	
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Sem 3	4	12+8	16	1	3+2	4				1	2	2	1	2	2							7	29	24	
Sem 4	3	9+6	12	2	6+4	8				1	2	2	1	2	2							7	29	24	
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**IKS#** Indian Knowledge Systems - Audit Course

#### ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION



(A Statutory Body of the Government of A.P)
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#### Guidelines for Evaluation of the Foundational Level Courses of the 1<sup>st</sup> Semester in the 4-year UG Honours Programs w.e.f 2023-24

#### 1. Background:

Commencing in the academic year 2023-24, a 4-year undergraduate (UG) Honors Program, is launched. This unique program encompasses both a Single Major and a Minor.

Within the first semester of this 4-year UG program, two fundamental courses have been designed. These courses fall into four distinct categories: one category is consistent across all arts and social sciences majors, another is tailored for commerce and business administration majors, a third category is designed for biological sciences majors, and the fourth category is intended for students majoring in mathematics, statistics, physical sciences, chemical sciences, and computer science.

It's important to note that these courses are foundational in nature.

#### 2. Objectives of designing the first two courses:

The courses in the first semester of graduate programs serve various objectives, with the primary goal of providing students with the necessary skills, knowledge, and preparation to succeed in their chosen field of study. The specific objectives of introducing pathway courses include:

1. Prepare Students for Advanced Study in a Major or for choosing a Minor: One of the primary objectives is to prepare students for the rigor of advanced graduate-level coursework by bridging any knowledge or skill gaps they may have. The courses shall also help the students in choosing a particular Minor of his/her interest.

#### 2. Ensure a Strong Foundation:

Help students build a strong foundational understanding of the core concepts and principles in their field, ensuring that they have the necessary background to succeed in more specialized courses.

#### 3. Address Diverse Backgrounds:

Accommodate students with diverse academic backgrounds and experiences, allowing them to come up to speed regardless of their prior education.

#### 4. Promote Interdisciplinary Understanding:

Encourage a holistic understanding of the subject matter, especially in understanding the multidisciplinary or interdisciplinary nature of the chosen domain of study, by covering a broad range of topics and perspectives.

#### 5. Foster a Growth Mindset:

Instill a growth mindset and a commitment to lifelong learning, encouraging students to understand and adapt to new challenges and opportunities in their field.

#### 6. Ensure Compliance with Program Requirements:

Ensure that students meet the minimum requirements for admission into the graduate program, especially in cases where students may lack prerequisites for their desired program.

#### 7. Enhance Retention and Graduation Rates:

Improve retention and graduation rates by giving students the tools they need to succeed, reducing attrition due to unpreparedness.

#### 8. Customize Learning Experiences:

Allow students to choose their minor and online courses to align with their individual needs and career goals, ensuring a more personalized educational experience.

#### 9. Provide Transitional Support:

Offer academic and transitional support services to help students acclimate to the demands of graduate-level education.

Thus, these courses are designed to support students' academic and professional development, ensuring they are well-equipped to excel in their chosen graduate programs and make meaningful contributions to their respective fields.

#### 3. List of courses designed -

For Arts and Social Sciences:

- 1. Fundamentals of Social Sciences
- 2. Perspectives on Indian Society

For Commerce/Business Administration:

- 1. Fundamentals of Commerce
- 2. Business Organization

#### For Biological Sciences

- 1. Introduction to Classical Biology
- 2. Introduction to Applied Biology

For Mathematics/Physical/Chemical/Computer Sciences:

- 1. Essentials and Applications of Mathematical, Physical and Chemical Sciences
- 2. Advances in Mathematical, Physical, and Chemical Sciences.

Universities are also given the freedom to devise such types of courses wherever necessary, meeting the stated objectives.

#### 4. Evaluation Methodology:

As these courses have been structured with distinct and individualized goals, there is a recognized need for a standardized evaluation approach. Consequently, it is suggested that the assessment of these courses will adopt an objective format, encompassing multiple choice questions, completion exercises, matching exercises, concise one-word responses, and succinct one-sentence responses.

#### 5. Objective Format of Evaluation

The main aims of having an objective format in the evaluation methodology of these courses which are at the foundation level are -

1. Consistency and Fairness: Objective formats, such as multiple-choice questions, provide a standardized and consistent method of assessment. This helps ensure that all students are evaluated based on the same criteria, promoting fairness in the evaluation process.

- 2. Efficiency: Objective assessments can be efficiently administered and graded, particularly in larger classes. This saves time and resources for both faculty and students.
- 3. Objective Measurement: Objective assessments offer a more objective and quantifiable measure of a student's knowledge and skills. The results are less susceptible to subjectivity or bias on the part of the grader.
- 4. Assessment of Diverse Learning Objectives: Objective formats can assess a wide range of learning objectives, from basic recall of facts (remembering) to more complex skills like analysis, application, and evaluation. This versatility makes them suitable for various courses and learning outcomes.
- 5. Alignment with Learning Objectives: Objective questions can be carefully aligned with specific learning objectives, ensuring that the assessment directly measures what students are expected to know and be able to do.
- 6. Reliability: Objective assessments tend to have higher reliability because they are less prone to subjective interpretation. Reliable assessments consistently measure a student's knowledge and skills.
- 7. Validity: Properly designed objective assessments are often considered to have high content validity because they can cover a broad range of content areas. They can also be designed to measure other forms of validity, such as construct or criterion-related validity.
- 8. Scalability: Objective formats are easily scalable to accommodate larger student populations, making them suitable for both small and large classes.
- 9. Data Analysis: Objective assessment results can be subject to quantitative data analysis, which can be valuable for program evaluation, improvement, and accreditation purposes.
- 10. Feedback for Course Improvement: By analyzing the results of objective assessments, instructors and institutions can identify areas where students may be struggling and make curriculum adjustments to improve student learning outcomes.
- 11. Assessment of Fundamental Concepts: Objective assessments are particularly effective for evaluating fundamental concepts that serve as a foundation for more advanced coursework.

#### 6. Aligning the evaluation with Bloom's Taxonomy:

Bloom's Taxonomy of educational objectives is a framework that categorizes different levels of cognitive learning and thinking skills. The taxonomy includes six major levels, organized from the lowest order of thinking to the highest order:

#### Remembering:

At this level, learners demonstrate the ability to recall facts, information, or concepts from memory. This involves recognizing or recalling previously learned material.

#### **Understanding:**

At this level, learners grasp the meaning of information. They can explain ideas, concepts, or theories in their own words, demonstrating comprehension and interpretation.

#### Applying:

Applying refers to using knowledge or concepts in new situations or contexts. Learners demonstrate their ability to take what they've learned and apply it to solve problems or complete tasks.

#### Analyzing:

At this level, students break down information into its constituent parts and examine the relationships between those parts. They identify patterns, connections, and structures within the material.

#### Evaluating:

This level involves making judgments or assessments about the value or quality of ideas, theories, solutions, or products. Learners use criteria to make informed decisions and justify their opinions.

#### Creating:

Creating is the highest level of Bloom's Taxonomy. At this level, students generate new ideas, products, or solutions. They combine elements to form a coherent whole and use their creativity to produce something original.

These levels are hierarchical, with each level building upon the skills and knowledge developed at the previous level. Bloom's Taxonomy is widely used in education to develop learning objectives, design curricula, and create assessments that target specific levels of cognitive development. It helps educators ensure that their teaching and assessment methods align with the desired learning outcomes.

#### 7. Designing an Objective Test Format:

Designing objective questions for evaluating these foundation courses involves creating questions that effectively assess students' understanding and knowledge of the fundamental concepts and skills taught in the course. Designing objective questions, including multiple-choice questions (MCQs), true or false questions, and fill-in-the-blank questions, by aligning them with the different levels of Bloom's Taxonomy is desirable. The focus shall be on -

#### 1. Understanding the Learning Objectives:

Start by thoroughly understanding the learning objectives of the foundation course. These objectives should guide the question design.

#### 2. Determining Question Types:

Decide on the types of objective questions that are to be included in the evaluation. Common types include MCQs, true or false questions, and fill-in-the-blank questions, matching, one-word or one-sentence responses.

#### 3. Categorizing by Cognitive Level:

Categorizing the learning objectives and topics based on the cognitive levels of Bloom's Taxonomy, which include, Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating.

#### 4. Balancing the Cognitive Levels:

A balanced distribution of questions across the cognitive levels, with a focus on assessing different levels of understanding needs to be ensured. This will help evaluate whether students have grasped the foundational knowledge and can apply it appropriately.

#### 5. Writing MCQs:

- For Remembering: Creating MCQs that assess students' recall of basic facts and concepts.
- For Understanding: Designing MCQs that evaluate comprehension of principles or theories.
- For Applying: Formulating MCQs that challenge students to use their knowledge to solve problems or make decisions.
- For Analyzing, Evaluating, and Creating: These higher-order levels may be more challenging with MCQs, but still, questions can be framed that involve critical thinking. For instance, asking students to choose the best solution among options, evaluating the correctness of statements, or completing scenarios.

#### 6. Writing True or False Questions:

True or false statements shall also align with the learning objectives. These questions are particularly suitable for assessing understanding and recalling factual information.

#### 7. Writing Fill-in-the-Blank Questions:

Fill-in-the-blank questions shall be used to assess students' ability to complete sentences, definitions, or statements. These questions can be effective for testing knowledge recall.

#### 8. Avoid Ambiguity:

It is to be ensured that all questions and statements are clear and free from ambiguity. Each question should have a single correct answer.

#### 9. Balancing and Sequencing:

Distributing questions evenly throughout the evaluation and arranging them logically in terms of difficulty and cognitive levels needs to be ensured.

#### 10. Grading Rubrics:

If applicable, provide grading rubrics for open-ended questions and clear guidelines on how to evaluate answers may be provided.

The process of creating objective questions to assess these foundational courses necessitates thoughtful reflection on the course's objectives and the cognitive levels that need to be appraised. It is essential to develop an efficient evaluation instrument that accurately gauges whether students have acquired the vital knowledge and competencies taught in these foundational courses.

#### 8. Semester End Evaluation & Internal Assessment:

70 marks for Semester End Examination and 30 marks for Internal Assessment. Proportionate changes could be made if there is a change in the marks assigned for Semester End and Internal Assessments. The examination will have a maximum duration of 2 hours.

#### 9. Question Paper Pattern:

	QUESTION PAPER TAXONOMY														
Level of Bloom's	Type of Question & m Assigned														
Taxonomy			neu												
	Mo	CQs	F	ΊΒ	V	SQ	N	ЛC	Т	/F					
	CIA	SEE	CIA	SEE	CIA	SEE	CIA	SEE	CIA	SEE					
Remembering	3 m	10 m													
Understanding	3 m	10 m													
Applying	4 m 10 m														
Analyzing					5 m	10 m									
Evaluating							5 m	10 m	5 m	10 m					
Creating			5 m	10 m											

MCQs: Multiple Choice Questions 1 mark per question. 1.5 minutes to answer

FIB: Fill in the blanks. 1 mark for question. 1.5 minute to answer

VSQ: Very short answer questions. 1 mark per question. 1.5 minute to answer

MC: Matching. 5 marks for matching of 5 items. 2.5 minutes to answer

T/F: True or False. 1 mark per question. 1.5 minutes to answer (m: marks; CIA: Continuous Internal Assessment; SEE: Semester End Examinations)

- 10. Each University shall prepare a Question Bank as per the Question Paper Taxonomy suggested above.
- 11. Universities shall prepare 4 series of Question Paper cum Answer Booklets marked A, B, C, and D with the questions jumbled, with equal weightage for all units of the syllabus.
- 12. The seating plan of the examination hall shall be prepared for students in multiples of 4 plus 2 or 8 plus 2 in a column as is done in the conduct of competitive examinations.
- 13. The question paper cum answer booklet shall bear the Register number of students and the question paper code (A or B or C or D) of that particular candidate.

- 14. For very short answer questions answers shall be given in one sentence and grading rubrics shall be provided for evaluation.
- 15. The key for the question paper series shall be provided and shall be in the custody of the Controller of Examinations.
- 16. It is desirable to conduct these examinations online.