



# ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ

"ವಿಜಯಮುಕ್ತರಾಜ್ಯ"ರ ಅಡಿಯಲ್ಲಿ, ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಸ್ಥಾಪಿತವಾದ ರಾಜ್ಯ ವಿಶ್ವವಿದ್ಯಾಲಯ  
"ಜ್ಞಾನ ಸಂಗಮ", ಬೆಳಗಾವಿ-೫೯೦೦೧೮, ಕರ್ನಾಟಕ, ಭಾರತ

## Visvesvaraya Technological University

(State University of Government of Karnataka Established as per the VTU Act, 1994)

"Jnana Sangama" Belagavi-590018, Karnataka, India  
Phone: (0831) 2498100, Fax: (0831) 2405467, Website: vtu.ac.in

**Dr. A. S. Deshpande** B.E., M.Tech., Ph.D.

Registrar

Phone: (0831) 2498100

Fax: (0831) 2405467

Ref: VTU/BGM/BOS/A9/2021-22 / ೩೩೩

Date: 3 DEC 2021

### CIRCULAR

**Subject:** 1<sup>st</sup> and 2<sup>nd</sup> -semester scheme(2021) of Teaching and Examinations regarding...

**Reference:** Hon'ble Vice-Chancellor's approval dated: 03.12.2021

The courses, 21IDT19- Innovation and Design Thinking (offered in 1<sup>st</sup> semester both for chemistry and physics groups) and 21SFH29- Scientific Foundations of Health (offered in 2<sup>nd</sup> semester both for chemistry and physics group) are compulsory courses for the students admitting to 1<sup>st</sup> year B.E./B.Tech. programs.

A slight modification is made in the scheme of teaching and examinations to offer both the courses in 1<sup>st</sup> as well as 2<sup>nd</sup> semester for 50:50 strength of intake. The scheme is attached with this circular for reference and needful. Also, 3-8 semesters scheme template has been attached for stakeholder's information.

All the principals of Engineering Colleges are hereby informed to bring the content of this circular to the notice of the concerned. Please note: corrected scheme of programs is made available @ <https://vtu.ac.in/en/b-e-scheme-syllabus/#menu05>

Sd/-

Registrar

**Encl:** As mentioned above.

**To,**

- All the Principals of the Engineering Colleges under the ambit of VTU Belagavi.

**Copy to:**

- The Hon'ble Vice-Chancellor through the secretary to VC for information
- The Registrar(Evaluation) for information and needful
- The Registrar's Office, VTU, Belagavi, for information.
- The Special Officer, Academic Section, VTU Belagavi, for information.
- The Director ITI SMU CNC for information and to upload the circular on the VTU web portal

REGISTRAR

7

**Visvesvaraya Technological University, Belagavi**  
**Scheme of Teaching and Examinations 2021**  
 Outcome-Based Education(OBE) and Choice Based Credit System (CBCS)  
 (Effective from the academic year 2021 - 22)

**I Semester (Physics Group)**

[Common to all B.E./B.Tech. Programs]

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	BSC	21MAT11	Calculus and Linear Algebra	TD and PSB: Mathematics	2	2	--		03	50	50	100	3
2	BSC	21PHY12	Engineering Physics	TD and PSB: Physics	2	2	--		03	50	50	100	3
3	ESC	21ELE13	Basic Electrical Engineering	TD and PSB: E and E Engineering	2	2	--		03	50	50	100	3
4	ESC	21CIV14	Elements of Civil Engineering and Mechanics	TD and PSB: Civil Engineering	3	--	--		03	50	50	100	3
5	ESC	21EVNL15	Engineering Visualization	TD: ME, Auto, IP, IEM, Mfg. Engineering PSB: Mechanical Engg	2	--	2		03	50	50	100	3
6	BSC	21PHYL16	Engineering Physics Laboratory	TD and PSB: Physics	--	--	2		03	50	50	100	1
7	ESC	21ELEL17	Basic Electrical Engineering Laboratory	TD and PSB: E and E Engineering	--	--	2		03	50	50	100	1
8	HSMC	21EGH18	Communicative English	TD and PSB: Humanities	1	1	1		02	50	50	100	2
9	AEC	21IDT19/29	Innovation and Design Thinking	Any Engineering Department	1	--	--		01	50	50	100	1
		OR											
		21SFH19/29	Scientific Foundations of Health										
<b>TOTAL</b>					<b>13</b>	<b>07</b>	<b>07</b>		<b>24</b>	<b>450</b>	<b>450</b>	<b>900</b>	<b>20</b>

**Note:** BSC: Basic Science Course, ESC: Engineering Science Course, HSMC: Humanity and Social Science & Management Courses, AEC – Ability Enhancement Courses.



L –Lecture, T – Tutorial, P- Practical/ Drawing, S – Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination	
<b>Credit definition:</b> 1 hour Lecture (L) per week = 1 Credit 2 hours Tutorial (T) per week = 1 Credit 2 hours Practical /Drawing (P) per week = 1 Credit	(a) <b>Four-credit</b> courses are to be designed for <b>50</b> hours of Teaching-Learning process. (b) <b>Three credit</b> courses are to be designed for <b>40</b> hours of Teaching-Learning process. (c) <b>Two credit</b> courses are to be designed for <b>25</b> hours of Teaching-Learning process. (d) <b>One-credit</b> courses are to be designed for <b>15</b> hours of Teaching-Learning process.
<b>AICTE Activity Points to be earned by students admitted to BE/B.Tech., /B.Plan day college programme (For more details refer to Chapter 6,AICTE Activity Point Programme, Model Internship Guidelines):</b> Over and above the academic grades, every Day College regular student admitted to the 4 years Degree programme and every student entering 4 years Degree programme through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Programme. Students transferred from other Universities to the fifth semester are required to earn 50 Activity Points from the year of entry to VTU. The Activity Points earned shall be reflected on the student's eighth semester Grade Card. The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) do not affect SGPA/CGPA and shall not be considered for vertical progression. In case students fail to earn the prescribed activity Points, an Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.	
<b>Summer Internship - I (21INT36):</b> All the students admitted to engineering programmes shall have to undergo a mandatory summer internship of <b>03 weeks</b> during the intervening vacation of II and III semesters. Summer Internship shall include Inter / Intra Institutional activities. A University Viva-voce examination (Presentation followed by question-answer session) shall be conducted during III semester and the prescribed credit shall be included in III semester. The internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take up / complete the internship shall be declared fail and shall have to complete during subsequent University examination after satisfying the internship requirements. (The faculty coordinator or mentor has to monitor the students' internship progress and interact to guide them for the successful completion of the internship.)	

Visvesvaraya Technological University, Belagavi  
**Scheme of Teaching and Examinations 2021**  
 Outcome-Based Education(OBE) and Choice Based Credit System (CBCS)  
 (Effective from the academic year 2021 - 22)

**II Semester (For students who attended I semester under Physics Group) [Common to all B.E./B.Tech Programs]**

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	BSC	21MAT21	Advanced Calculus and Numerical Methods	TD and PSB: Mathematics	2	2	--		03	50	50	100	3
2	BSC	21CHE22	Engineering Chemistry	TD and PSB: Chemistry	2	2	--		03	50	50	100	3
3	ESC	21PSP23	Problem-Solving through Programming	TD and PSB: Computer Science and Engineering	2	2	--		03	50	50	100	3
4	ESC	21ELN24	Basic Electronics & Communication Engineering	TD: ECE/E and I/ TCPSB: ECE	2	2	--		03	50	50	100	3
5	ESC	21EME25	Elements of Mechanical Engineering	TD: ME, Auto, IP,IEM, Mfg Engineering PSB: Mechanical Engg	2	--	2		03	50	50	100	3
6	BSC	21CHEL26	Engineering Chemistry Laboratory	TD and PSB: Chemistry	--	--	2		03	50	50	100	1
7	ESC	21CPL27	Computer Programming Laboratory	TD and PSB: Computer Science and Engineering	--	--	2		03	50	50	100	1
8	HSMC	21EGH28	Professional Writing Skills in English	TD and PSB: Humanities	1	1	1		02	50	50	100	2
9	AEC	21SFH19/29	Scientific Foundations of Health	Any Department	1	--	--		01	50	50	100	1
		OR											
		21IDT19/29	Innovation and Design Thinking										
<b>TOTAL</b>					<b>13</b>	<b>09</b>	<b>07</b>		<b>24</b>	<b>450</b>	<b>450</b>	<b>900</b>	<b>20</b>

**Note:** BSC: Basic Science Course, ESC: Engineering Science Course, HSMC: Humanity and Social Science & Management Courses, AEC -Ability Enhancement Courses.

L -Lecture, T - Tutorial, P- Practical/ Drawing, S - Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination



**Credit definition:**

1 hour Lecture (L) per week = 1 Credit

2 hours Tutorial (T) per week = 1 Credit

2 hours Practical /Drawing (P) per week = 1 Credit

(a) **Four credit** courses are to be designed for **50** hours of Teaching - Learning process.(b) **Three credit** courses are to be designed for **40** hours of Teaching - Learning process.(c) **Two credit** courses are to be designed for **25** hours of Teaching - Learning process.(d) **One credit** courses are to be designed for **15** hours of Teaching - Learning process.**AICTE Activity Points to be earned by students admitted to BE/B.Tech./B.Planning day college programme (For more details refer to Chapter 6, AICTE Activity Point Programme, Model Internship Guidelines):**

Over and above the academic grades, every Day College regular student admitted to the 4 years Degree programme and every student entering 4 years Degree programme through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Programme. Students transferred from other Universities to the fifth semester are required to earn 50 Activity Points from the year of entry to VTU. The Activity Points earned shall be reflected on the student's eighth semester Grade Card.

The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) do not affect SGPA/CGPA and shall not be considered for vertical progression.

In case students fail to earn the prescribed activity Points, an Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.

**Summer Internship - I (21INT36):** All the students admitted to engineering programmes shall have to undergo a mandatory summer internship of 03 weeks during the intervening vacation of II and III semesters. Summer Internship shall include Inter / Intra Institutional activities. A University Viva-voce examination (Presentation followed by question-answer session) shall be conducted during III semester and the prescribed credit shall be included in III semester. The internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take up / complete the internship shall be declared fail and shall have to complete during subsequent University examination after satisfying the internship requirements. (The faculty coordinator or mentor has to monitor the students' internship progress and interact to guide them for the successful completion of the internship.)



Visvesvaraya Technological University, Belagavi  
**Scheme of Teaching and Examinations 2021**  
 Outcome-Based Education(OBE) and Choice Based Credit System (CBCS)  
 (Effective from the academic year 2021 - 22)

**I Semester (Chemistry Group)****[Common to all B.E./B.Tech. Programmes]**

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	BSC	21MAT11	Calculus and Linear Algebra	TD and PSB: Mathematics	2	2	--		03	50	50	100	3
2	BSC	21CHE12	Engineering Chemistry	TD and PSB: Chemistry	2	2	--		03	50	50	100	3
3	ESC	21PSP13	Problem-Solving through Programming	TD and PSB: Computer Science and Engineering	2	2	--		03	50	50	100	3
4	ESC	21ELN14	Basic Electronics & Communication Engineering	TD: ECE/E and I/ TCPSB: ECE	2	2	--		03	50	50	100	3
5	ESC	21EME15	Elements of Mechanical Engineering	TD: ME, Auto, IP,IEM, Mfg Engineering PSB: Mechanical Engg	2	--	2		03	50	50	100	3
6	BSC	21CHEL16	Engineering Chemistry Laboratory	TD and PSB: Chemistry	--	--	2		03	50	50	100	1
7	ESC	21CPL17	Computer Programming Laboratory	TD and PSB: Computer Science and Engineering	--	--	2		03	50	50	100	1
8	HSMC	21EGH18	Communicative English	TD and PSB: Humanities	1	1	1		02	50	50	100	2
9	AEC	21IDT19/29	Innovation and Design Thinking	Any Engineering Department	1	--	--		01	50	50	100	1
		OR											
		21SFH19/29	Scientific Foundations of Health										
<b>TOTAL</b>					<b>13</b>	<b>09</b>	<b>07</b>		<b>24</b>	<b>450</b>	<b>450</b>	<b>900</b>	<b>20</b>

**Note:** BSC: Basic Science Course, ESC: Engineering Science Course, HSMC: Humanity and Social Science & Management Courses, AEC –Ability Enhancement Courses.



L -Lecture, T - Tutorial, P- Practical/ Drawing, S - Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination	
<b>Credit definition:</b> 1 hour Lecture (L) per week = 1 Credit 2 hours Tutorial (T) per week = 1 Credit 2 hours Practical /Drawing (P) per week = 1 Credit	(a) <b>Four-credit</b> courses are to be designed for <b>50</b> hours of Teaching-Learning process. (b) <b>Three credit</b> courses are to be designed for <b>40</b> hours of Teaching-Learning process. (c) <b>Two credit</b> courses are to be designed for <b>25</b> hours of Teaching-Learning process. (d) <b>One-credit</b> courses are to be designed for <b>15</b> hours of Teaching-Learning process.
<b>AICTE Activity Points to be earned by students admitted to BE/B.Tech., /B.Plan day college programme (For more details refer to Chapter 6,AICTE Activity Point Programme, Model Internship Guidelines):</b> Over and above the academic grades, every Day College regular student admitted to the 4 years Degree programme and every student entering 4 years Degree programme through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE ActivityPoint Programme. Students transferred from other Universities to the fifth semester are required to earn 50 Activity Points from the year of entry toVTU. The Activity Points earned shall be reflected on the student's eighth semester Grade Card. The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) do not affect SGPA/CGPA and shall not be considered for vertical progression. In case students fail to earn the prescribed activity Points, an Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.	
<b>Summer Internship - I (21INT36):</b> All the students admitted to engineering programmes shall have to undergo a mandatory summer internship of <b>03 weeks</b> during the intervening vacation of II and III semesters. Summer Internship shall include Inter / Intra Institutional activities. A University Viva-voce examination (Presentation followed by question-answer session) shall be conducted during III semester and the prescribed credit shall be included in III semester. The internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take up / complete the internship shall be declared fail and shall have to complete during subsequent University examination after satisfying the internship requirements. (The faculty coordinator or mentor has to monitor the students' internship progress and interact to guide them for the successful completion of the internship.)	



Visvesvaraya Technological University, Belagavi  
**Scheme of Teaching and Examinations 2021**  
 Outcome-Based Education(OBE) and Choice Based Credit System (CBCS)  
 (Effective from the academic year 2021 – 22)

**II Semester ( For students who attended 1<sup>st</sup> semester under Chemistry Group)**

**[Common to all B.E./B.Tech Programs]**

Sl. No	Course and Course Code		Course Title	Teaching Department(TD) and Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	BSC	21MAT21	Advanced Calculus and Numerical Methods	TD and PSB: Mathematics	2	2	--		03	50	50	100	3
2	BSC	21PHY22	Engineering Physics	TD and PSB: Physics	2	2	--		03	50	50	100	3
3	ESC	21ELE23	Basic Electrical Engineering	TD and PSB: E and E Engineering	2	2	--	--	03	50	50	100	3
4	ESC	21CIV24	Elements of Civil Engineering and Mechanics	TD and PSB: Civil Engineering	3	--	--		03	50	50	100	3
5	ESC	21EVNL25	Engineering Visualization	TD: ME, Auto, IP,IEM, Mfg. Engineering PSB: Mechanical Engg	2	--	2		03	50	50	100	3
6	BSC	21PHYL26	Engineering Physics Laboratory	TD and PSB: Physics	--	--	2		03	50	50	100	1
7	ESC	21ELEL27	Basic Electrical Engineering Laboratory	TD and PSB: E and E Engineering	--	--	2		03	50	50	100	1
8	HSMC	21EGH28	Professional Writing Skills in English	TD and PSB: Humanities	1	1	1		02	50	50	100	2
9	AEC	21SFH29/19	Scientific Foundations of Health	Any Department	1	--	--		01	50	50	100	1
		OR											
		21IDT29/19	Innovation and Design Thinking										
<b>TOTAL</b>					<b>13</b>	<b>07</b>	<b>07</b>		<b>24</b>	<b>450</b>	<b>450</b>	<b>900</b>	<b>20</b>

**Note:** BSC: Basic Science Course, ESC: Engineering Science Course, HSMC: Humanity and Social Science & Management Courses, AEC –Ability Enhancement Courses.

**L** –Lecture, **T** – Tutorial, **P**- Practical/ Drawing, **S** – Self Study Component, **CIE**: Continuous Internal Evaluation, **SEE**: Semester End Examination



<p><b>Credit definition:</b>  1 hour Lecture (L) per week = 1 Credit  2 hours Tutorial (T) per week = 1 Credit  2 hours Practical /Drawing (P) per week = 1 Credit</p>	<p>(a) <b>Four credit</b> courses are to be designed for <b>50</b> hours of Teaching – Learning process.  (b) <b>Three credit</b> courses are to be designed for <b>40</b> hours of Teaching – Learning process.  (c) <b>Two credit</b> courses are to be designed for <b>25</b> hours of Teaching – Learning process.  (d) <b>One credit</b> courses are to be designed for <b>15</b> hours of Teaching – Learning process.</p>
<p><b>AICTE Activity Points to be earned by students admitted to BE/B.Tech./B.Plan day college programme (For more details refer to Chapter 6,AICTE Activity Point Programme, Model Internship Guidelines):</b>  Over and above the academic grades, every Day College regular student admitted to the 4 years Degree programme and every student entering 4 years Degree programme through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Programme. Students transferred from other Universities to the fifth semester are required to earn 50 Activity Points from the year of entry to VTU. The Activity Points earned shall be reflected on the student's eighth semester Grade Card.  The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) do not affect SGPA/CGPA and shall not be considered for vertical progression.  In case students fail to earn the prescribed activity Points, an Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.</p>	
<p><b>Summer Internship - I (21INT36):</b> All the students admitted to engineering programmes shall have to undergo a mandatory summer internship of 03 weeks during the intervening vacation of II and III semesters. Summer Internship shall include Inter / Intra Institutional activities. A University Viva-voce examination (Presentation followed by question-answer session) shall be conducted during III semester and the prescribed credit shall be included in III semester. The internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take up / complete the internship shall be declared fail and shall have to complete during subsequent University examination after satisfying the internship requirements. (The faculty coordinator or mentor has to monitor the students' internship progress and interact to guide them for the successful completion of the internship.)</p>	



**I Semester**

<b>INNOVATION and DESIGN THINKING</b>			
Course Code	<b>21IDT19/29</b>	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	1:0:0	SEE Marks	50
Total Hours of Pedagogy	25	Total Marks	100
Credits	01	Exam Hours	02
<p><b>Course Category:</b> Foundation</p> <p><b>Preamble:</b> This course provides an introduction to the basic concepts and techniques of engineering and reverse engineering, the process of design, analytical thinking and ideas, basics and development of engineering drawing, application of engineering drawing with computer aide.</p> <p><b>Course objectives:</b></p> <ul style="list-style-type: none"> <li>To explain the concept of design thinking for product and service development</li> <li>To explain the fundamental concept of innovation and design thinking</li> <li>To discuss the methods of implementing design thinking in the real world.</li> </ul>			
<p><b>Teaching-Learning Process (General Instructions)</b></p> <p>These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.</p> <ol style="list-style-type: none"> <li>Lecturer method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.</li> <li>Show Video/animation films to explain concepts</li> <li>Encourage collaborative (Group Learning) Learning in the class</li> <li>Ask at least three HOTS (Higher-order Thinking) questions in the class, which promotes critical thinking</li> <li>Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develops thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.</li> <li>Topics will be introduced in multiple representations.</li> <li>Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.</li> <li>Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.</li> </ol>			
<b>Module-1</b>			
<b>PROCESS OF DESIGN</b>			
<b>Understanding Design thinking</b>			
Shared model in team-based design – Theory and practice in Design thinking – Explore presentation signers across globe – MVP or Prototyping			
<b>Teaching-Learning Process</b>	Introduction about the design thinking: Chalk and Talk method Theory and practice through presentation MVP and Prototyping through live examples and videos		
<b>Module-2</b>			
<b>Tools for Design Thinking</b>			
Real-Time design interaction capture and analysis – Enabling efficient collaboration in digital space – Empathy for design – Collaboration in distributed Design			
<b>Teaching-Learning</b>	Case studies on design thinking for real-time interaction and analysis		



<b>Process</b>	Simulation exercises for collaborated enabled design thinking Live examples on the success of collaborated design thinking	
<b>Module-3</b>		
<b>Design Thinking in IT</b> Design Thinking to Business Process modelling – Agile in Virtual collaboration environment – Scenario based Prototyping		
<b>Teaching-Learning Process</b>	Case studies on design thinking and business acceptance of the design Simulation on the role of virtual eco-system for collaborated prototyping	
<b>Module-4</b>		
<b>DT For strategic innovations</b> Growth – Story telling representation – Strategic Foresight - Change – Sense Making - Maintenance Relevance – Value redefinition - Extreme Competition – experience design - Standardization – Humanization - Creative Culture – Rapid prototyping, Strategy and Organization – Business Model design.		
<b>Teaching-Learning Process</b>	Business model examples of successful designs Presentation by the students on the success of design Live project on design thinking in a group of 4 students	
<b>Module-5</b>		
Design thinking workshop Design Thinking Work shop Empathize, Design, Ideate, Prototype and Test		
<b>Teaching-Learning Process</b>	8 hours design thinking workshop from the expert and then presentation by the students on the learning from the workshop	
<b>Course Outcomes:</b> Upon the successful completion of the course, students will be able to:		
<b>CO Nos.</b>	<b>Course Outcomes</b>	<b>Knowledge Level (Based on revised Bloom's Taxonomy)</b>
CO1	Appreciate various design process procedure	K2
CO2	Generate and develop design ideas through different technique	K2
CO3	Identify the significance of reverse Engineering to Understand products	K2
CO4	Draw technical drawing for design ideas	K3



**Assessment Details (both CIE and SEE)**

methods of CIE need to be defined topic wise i.e.- Tests, MCQ, Quizzes, Seminar or micro project/Course Project, Term Paper)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 35% of maximum marks in SEE and a minimum of 40% of maximum marks in CIE. Semester End Exam (SEE) is conducted for 100 marks (3 hours' duration) and scaled down to 50 marks. Based on this grading will be awarded.

The student has to score a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

**Continuous Internal Evaluation:**

Three Unit Tests each of **20 Marks (duration 01 hour)**

1. First test at the end of 5<sup>th</sup> week of the semester
2. Second test at the end of the 10<sup>th</sup> week of the semester
3. Third test at the end of the 15<sup>th</sup> week of the semester

**(All tests are similar to the SEE pattern i.e question paper pattern is MCQ)**

Two assignments each of **10 Marks**

4. First assignment at the end of 4<sup>th</sup> week of the semester
5. Second assignment at the end of 9<sup>th</sup> week of the semester

Report writing /Group discussion/Seminar any one of three suitably planned to attain the COs and POs for **20 Marks (duration 01 hours)**

6. At the end of the 13<sup>th</sup> week of the semester

The sum of three tests, two assignments, and quiz/seminar/group discussion will be out of 100 marks and will be **scaled down to 50 marks**

CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

**Semester End Examination:**

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for subject

SEE paper will be set for 50 questions of each of 01 marks. The pattern of the question paper is MCQ. The time allotted for SEE is **01 hours**

**Suggested Learning Resources:**

**Text Books :**

1. John.R.Karsnitz, Stephen O'Brien and John P. Hutchinson, "Engineering Design",Cengage learning (International edition) Second Edition, 2013.
2. Roger Martin, "The Design of Business: Why Design Thinking is the Next Competitive Advantage", Harvard Business Press , 2009.
3. Hasso Plattner, Christoph Meinel and Larry Leifer (eds), "Design Thinking: Understand – Improve – Apply", Springer, 2011
4. Idris Mootee, "Design Thinking for Strategic Innovation: What They Can't Teach You at Business or Design School", John Wiley & Sons 2013.



**References:**

5. Yousef Haik and Tamer M. Shahin, "Engineering Design Process", Cengage Learning, Second Edition, 2011.
6. Book - Solving Problems with Design Thinking - Ten Stories of What Works (Columbia Business School Publishing) Hardcover – 20 Sep 2013 by Jeanne Liedtka (Author), Andrew King (Author), Kevin Bennett (Author).

**Web links and Video Lectures (e-Resources):**

1. [www.tutor2u.net/business/presentations/. /productlifecycle/default.html](http://www.tutor2u.net/business/presentations/. /productlifecycle/default.html)
2. [https://docs.oracle.com/cd/E11108\\_02/otn/pdf/. /E11087\\_01.pdf](https://docs.oracle.com/cd/E11108_02/otn/pdf/. /E11087_01.pdf)
3. [www.bizfilings.com](http://www.bizfilings.com) › Home › Marketing › Product Development
4. <https://www.mindtools.com/brainstm.html>
5. <https://www.quicksprout.com/. /how-to-reverse-engineer-your-competit>
6. [www.vertabelo.com/blog/documentation/reverse-engineering](http://www.vertabelo.com/blog/documentation/reverse-engineering)  
<https://support.microsoft.com/en-us/kb/273814>
7. <https://support.google.com/docs/answer/179740?hl=en>
8. <https://www.youtube.com/watch?v=2mjSDIBaUIM>  
[thevirtualinstructor.com/foreshortening.html](http://thevirtualinstructor.com/foreshortening.html)  
<https://dschool.stanford.edu/.../designresources/.../ModeGuideBOOTCAMP2010L.pdf>  
<https://dschool.stanford.edu/use-our-methods/> 6. <https://www.interaction-design.org/literature/article/5-stages-in-the-design-thinking-process> 7.  
<http://www.creativityatwork.com/design-thinking-strategy-for-innovation/> 49 8.  
<https://www.nngroup.com/articles/design-thinking/> 9.  
<https://designthinkingforeducators.com/design-thinking/> 10.  
[www.designthinkingformobility.org/wp-content/.../10/NapkinPitch\\_Worksheet.pdf](http://www.designthinkingformobility.org/wp-content/.../10/NapkinPitch_Worksheet.pdf)

**Activity Based Learning (Suggested Activities in Class)/ Practical Based learning**

- <http://dschool.stanford.edu/dgift/>

[https://onlinecourses.nptel.ac.in/noc19\\_mg60/preview](https://onlinecourses.nptel.ac.in/noc19_mg60/preview)



## II Semester – AEC Course

<b>Scientific Foundations of Health</b>			
Course Code	21SFH19/29	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	1:0:0	SEE Marks	50
Total Hours of Pedagogy	02 Hours/Week	Total Marks	100
Credits	01	Exam Hours	60 Minutes / 01 Hour
<p><b>Course objectives:</b></p> <p>The course 21SFH29 will enable the students:</p> <ul style="list-style-type: none"> <li>• To know about Health and wellness (and its Beliefs)</li> <li>• To acquire Good Health &amp; It's balance for positive mind-set</li> <li>• To Build the healthy lifestyles for good health for their better future</li> <li>• To Create of Healthy and caring relationships to meet the requirements of MNC and LPG world</li> <li>• To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future</li> <li>• To Prevent and fight against harmful diseases for good health through positive mindset</li> </ul>			
<p><b>Teaching-Learning Process (General Instructions)</b></p> <p>These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.</p> <ul style="list-style-type: none"> <li>✓ Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools and software's to meet the present requirements of the Global employment market.                             <ul style="list-style-type: none"> <li>(i) Direct instructional method ( Low /Old Technology),</li> <li>(ii) Flipped classrooms ( High/advanced Technological tools),</li> <li>(iii) Blended learning ( combination of both),</li> <li>(iv) Enquiry and evaluation based learning,</li> <li>(v) Personalized learning,</li> <li>(vi) Problems based learning through discussion,</li> <li>(vii) Following the method of expeditionary learning Tools and techniques,</li> </ul> </li> <li>✓ Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills in teaching of the concepts of Health and Wellness in general.</li> </ul>			
<p><b>Module-1</b></p> <p><b><u>Good Health and It's balance for positive mindset:</u></b></p> <p>What is Health, Why Health is very important Now? – What influences your Health?, Health and Behaviour, Health beliefs and advertisements, Advantages of good health (Short term and long term benefits), Health and Society, Health and family, Health and Personality - Profession. Health and behaviour, Disparities of health in different vulnerable groups. Health and psychology, Methods to improve good psychological health. Psychological disorders (Stress and Health - Stress management), how to maintain good health, Mindfulness for Spiritual and Intellectual health, Changing health habits for good health. Health and personality.</p>			
Teaching -Learning Process	Chalk and talk method, Power Point presentation and YouTube videos, Animation videos methods. creating real time stations in classroom discussions. Giving activities & assignments.		
<p><b>Module-2</b></p>			



<b><u>Building of healthy lifestyles for better future:</u></b>	
Developing a healthy diet for good health, Food and health, Nutritional guidelines for good health and well beingness, Obesity and overweight disorders and its management, Eating disorders - proper exercises for its maintenance (Physical activities for health), Fitness components for health, Wellness and physical function,	
<b>Teaching-Learning Process</b>	Chalk and talk method, PowerPoint presentation and YouTube videos, Animation videos methods. creating real time stations in classroom discussions. Giving activities & assignments.
<b>Module-3</b>	
<b><u>Creation of Healthy and caring relationships :</u></b>	
Building communication skills (Listening and speaking), Friends and friendship - education, the value of relationships and communication, Relationships for Better or worsening of life, understanding of basic instincts of life (more than a biology), Changing health behaviours through social engineering,	
<b>Teaching-Learning Process</b>	Chalk and talk method, PowerPoint presentation and Animation videos methods. creating real time stations in classroom discussions. Giving activities and assignments.
<b>Module-4</b>	
<b><u>Avoiding risks and harmful habits :</u></b>	
Characteristics of health compromising behaviors, Recognizing and avoiding of addictions, How addiction develops and addictive behaviors, Types of addictions, influencing factors for addictions, Differences between addictive people and non addictive people and their behavior with society, Effects and health hazards from addictions Such as..., how to recovery from addictions.	
<b>Teaching-Learning Process</b>	Chalk and talk method, PowerPoint presentation and Animation videos methods. creating real time stations in classroom discussions. Giving activities and assignments.
<b>Module-5</b>	
<b><u>Preventing and fighting against diseases for good health :</u></b>	
Process of infections and reasons for it, How to protect from different types of transmitted infections such as..., Current trends of socio economic impact of reducing your risk of disease, How to reduce risks for good health, Reducing risks and coping with chronic conditions, Management of chronic illness for Quality of life, Health and Wellness of youth : a challenge for the upcoming future Measuring of health and wealth status.	
<b>Teaching-Learning Process</b>	Chalk and talk method, PowerPoint presentation and YouTube videos, Animation videos methods. creating real time stations in classroom discussions. Giving activities & assignments.
<b>Course outcome (Course Skill Set)</b>	
At the end of the course the student will be able :	
CO 1: To understand Health and wellness (and its Beliefs)	
CO 2: To acquire Good Health & It's balance for positive mindset	
CO 3: To inculcate and develop the healthy lifestyle habits for good health.	
CO 4: To Create of Healthy and caring relationships to meet the requirements of MNC and LPG world	
CO 5: To adopt the innovative & positive methods to avoid risks from harmful habits in their campus & outside the campus.	
CO 6: To positively fight against harmful diseases for good health through positive mindset.	

**Assessment Details (both CIE and SEE)**

methods of CIE need to be defined topic wise i.e.- Tests, MCQ, Quizzes, Seminar or micro project/Course Project, Term Paper)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 35% of maximum marks in SEE and a minimum of 40% of maximum marks in CIE. Semester End Exam (SEE) is conducted for 100 marks (3 hours' duration) and scaled down to 50 marks. Based on this grading will be awarded.

The student has to score a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

**Continuous Internal Evaluation:**

Three Unit Tests each of **20 Marks (duration 01 hour)**

1. First test at the end of 5<sup>th</sup> week of the semester
2. Second test at the end of the 10<sup>th</sup> week of the semester
3. Third test at the end of the 15<sup>th</sup> week of the semester

**(All tests are similar to the SEE pattern i.e question paper pattern is MCQ)**

Two assignments each of **10 Marks**

4. First assignment at the end of 4<sup>th</sup> week of the semester
5. Second assignment at the end of 9<sup>th</sup> week of the semester

Report writing /Group discussion/Seminar any one of three suitably planned to attain the COs and POs for **20 Marks (duration 01 hours)**

6. At the end of the 13<sup>th</sup> week of the semester

The sum of three tests, two assignments, and quiz/seminar/group discussion will be out of 100 marks and will be **scaled down to 50 marks**

CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

**Semester End Examination:**

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for subject

SEE paper will be set for 50 questions of each of 01 marks. The pattern of the question paper is MCQ. The time allotted for SEE is **01 hours**

**Suggested Learning Resources:**

1. **Health Psychology** (Second edition) by Charles Abraham, Mark Conner, Fiona Jones and Daryl O'Connor - Published by Routledge 711 Third Avenue, New York, NY 10017.
2. **Health Psychology - A Textbook**, FOURTH EDITION by Jane Ogden McGraw Hill Education (India) Private Limited - Open University Press
3. **HEALTH PSYCHOLOGY (Ninth Edition)** by SHELLEY E. TAYLOR - University of California, Los Angeles, McGraw Hill Education (India) Private Limited - Open University Press
4. **Scientific Foundations of Health (Health & Wellness) - General Books** published for university and colleges references by popular authors and published by the reputed publisher.
- 1) **SWAYAM / NPTL/ MOOCS/ We blinks/ Internet sources/ YouTube videos** and other materials / notes



**Activity Based Learning (Suggested Activities in Class)/ Practical Based learning**

- ✓ Contents related activities (Activity-based discussions)
- ✓ For active participation of students, instruct the students to prepare Flowcharts and Handouts
- ✓ Organizing Group wise discussions and Health issues based activities
- ✓ Quizzes and Discussions
- ✓ Seminars and assignments

